MISSISSIPPI STATE
UNIVERSITY™

UNIVERSITY COMMITTEE ON
COURSES AND CURRICULA

A MEMORANDUM

DATE: November 12, 2014

TO: UCCC Members

FROM: Kirk Swortzel, Chair

SUBJECT: November 21, 2014 Meeting

Enclosed are the minutes from the meeting on October 17, 2014 and the agenda and course proposals for the meeting on **Friday, November 21, 2014 at 1:30 p.m.** The November meeting will be held in Room 324 of the Student Union. Please contact the UCCC office if you are unable to attend.

Thank you.

Enclosures: October 17, 2014 Meeting Minutes
Course/Curriculum Proposals

Post Office Box 5268 • Starkville, MS 39762 • Office: (662) 325-9410 • Fax: (662) 325-1846

AGENDA
UNIVERSITY COMMITTEE ON COURSES AND CURRICULA
November 21, 2014

1. **Welcome**
2. **Approval of minutes**
3. **Course proposals by college/school:**

AGRICULTURE AND LIFE SCIENCES

Modification	HS 8823	Advanced Theories of Human Development and Family Relations (resubmit)

ARTS AND SCIENCES

Addition	CH 8613	Methods in Biophysical Chemistry (resubmit)
Modification	PSY 8450	Applied Clinical
Modification	PSY 8460	Professional Practicum

BUSINESS

Modification	BIS 6523	Advanced Languages II

EDUCATION

+Distance	EDE 3233	Teaching Children's Literature at the Elementary and Middle Levels (Continued from Oct. Agenda)
+Distance	EDE 3343	Teaching Adolescent Literature (Continued from Oct. Agenda)
Deletion	EDS 9603	Practicum in College Teaching of Secondary Education (Continued from Oct. Agenda)
Deletion	EDX 4423	Teaching the Disadvantaged Child (Continued from Oct. Agenda)
Modification	EDX 8393	Seminar in Emotional/Behavioral Disabilities

ENGINEERING

+Distance	ASE 6013	Directed Project in ASE
+Distance	ASE 7000	Directed Individual Study
Add+Distance	CS 4363/6363	Software Reverse Engineering

FORESTRY

Modification	FP 1103	Wood Technology and Products (resubmit)
Modification	FP 3012	Forest Industries (resubmit)
Modification	FP 4023/6023	Wood Chemistry (resubmit)

Modification	FP 4113/6113	Adhesives and Finishes (resubmit)
Modification	FP 4143/6143	Composite Wood Products (resubmit)
Modification	FP 4213/6213	Wood Deterioration and Preservation (resubmit)
Modification	FP 4253/6253	Quantitative Methods in Forest Products and Furniture (resubmit)
Deletion	FP 4313/6313	Environmental Principles (resubmit)
Deletion	FP 4323/6323	Wood Physics (resubmit)
Deletion	FP 4423/6423	Mechanical Properties (resubmit)
Addition	SBP 1203	Anatomy of Wood and Other Natural Materials (resubmit)
Addition + Maymester	SBP 2012	Introduction to Bioproduct Industries (resubmit)
Addition	SBP 2123	Materials and Processing in Sustainable Bioproducts (resubmit)
Addition	SBP 3113	Biomaterial Physics and Mechanics (resubmit)
Addition	SBP 3123	Biomass to Bioproducts (resubmit)
Addition	SBP 3143	Biomass Characteristics and Production (resubmit)
Addition	SBP 4133/6133	Biorefinery Processes (resubmit)
Addition	SBP 4153/6153	Biological Conversion of Biomass (resubmit)
Addition	SBP 4243/6243	Sustainable Bioproducts (resubmit)
Addition	SBP 4263/6263	Strength Design of Furniture as Green Products (resubmit)
Addition	SBP 4313/6313	Bioproducts and the Environment (resubmit)
Addition	SBP 4333/6333	Bioproducts and Environmental Biotechnology (resubmit)
Addition	SBP 4443	Capstone Sustainable Bioproducts (resubmit)
Addition	SBP 4450	Undergraduate Research in Sustainable Bioproducts (resubmit)

VETERINARY MEDICINE

Addition	CVM 8033	Poultry Histopathology
Addition	CVM 8822	Advanced Surgical Techniques (resubmit)

4. Degree proposals by college/school:

AGRICULTURE AND LIFE SCIENCES

Add	MS	Plant and Soil Sciences
Add	Ph.D.	Plant and Soil Sciences

BUSINESS

Modification	BBA	Business Information Systems
Addition	Minor	Entrepreneurship

EDUCATION

Modification +Distance	MAT	Special Education Concentration

FOREST RESOURCES

Addition	BS	Sustainable Bioproducts (resubmit)

If the Links do not work for you, please review the proposals on the Course Inventory Management site located on the UCCC website.

AG & LIFE SCIENCES

HS 2573	Fashion Portfolio Development
PSS 4103	Forage and Pasture Crops

ARCHITECTURE

ART AND DESIGN

ART 3643	Art of the Graphic Novel

ARTS AND SCIENCES

CH 1043	Survey of Chemistry I
CH 1051	Experimental Chemistry
CH 1053	Survey of Chemistry II
CO 4263	Gender Communication
FLS 1113	Spanish I
FLS 1123	Spanish II
FLS 2133	Spanish III

BUSINESS

BIS 1523	Web Development I
BIS 2523	Web Development II
BIS 3523	Advanced Languages I
BIS 4523	Business Programming with COBOL
BL 4243	Legal Aspects of Entrepreneurship
FIN 4323	Entrepreneurial Finance
MKT 4423	Strategic Brand Management

EDUCATION

EDX 3223	Introduction to Emotional/Behavioral Disorders
EDX 3233	Contingency Management
EDX 4113	Methods and Materials for Early Childhood Students with Disabilities
EDX 4123	Methods and Materials for Elementary Students with Disabilities
EDX 4133	Methods and Materials for Secondary Students with Disabilities
EDX 4353	Assistive Technology with Special Education
EDX 4413	Working with Families of Students with Disabilities
EDX 4503	Teaching Students with Severe Disabilities
EDX 4603	Students with Physical/Multiple Disabilities
EDX 4613	Teaching Students with Physical/Multiple Disabilities
EDX 4623	Adaptions for Students with Physical/Multiple Disabilities
EDX 6173	Introduction to Contingency Management
EDX 8023	Introduction to Teaching Individuals with Learning Disabilities
EDX 8053	Introduction to Teaching Individuals with Emotional & Behavioral
EDX 8143	Early Education for Students with Disabilities

EDX 8163	Teaching Strategies for Students Who are Gifted
EDX 8173	Special Education in the Regular Classroom
EDX 8213	Practicum: Remediation of Students with Disabilities
EDX 8233	Special Education Internship I
EDX 8303	Seminar in Intellectual Disabilities
EDX 8403	Teaching Students with Emotional/Behavioral Disabilities
MU 2521	Steel Drum Ensemble
MUE 3233	Guitar Pedagogy
SS 2103	Sport Careers and Practicum
SS 3503	Sport and Recreational Leadership
SS 3603	Program Planning in Sport and Recreation
SS 3703	Contemporary Issues in Intercollegiate Athletics
SS 4503	Sport Promotion and Sales Management

ENGINEERING

CME 8000	Thesis Research/Thesis in Computational Engineering

University Committee on Courses and Curricula
Mississippi State University
October 17, 2014

Present: Amy Adkerson, Kari Babski-Reeves, Russell Carr, Mike Cox, Robert Harland, Kevin Hunt, Olivia McCain, Lynda Moore, Rob Moore, Kelly Moser, Emily Owen, Tommy Parker, Andy Perkins, Melinda Pilkinton, Johnny Richwine, John Riggins, John Rigsby, Kathy Sherman-Morris, Barry Stewart, Pam Sullivan, Kirk Swortzel, Jenny Turner, Mark Welch, Tom White, Robert Wolverston, Sr., Chien Yu

Excused: Amy Crumpton, Jo Jo Dodd, Dana Franz, Scott Montgomery, Bob Otondo, Jack Smith

Proxy: Robert Wolverton, Jr. for Pat Matthes

Absent: Skip Jack, Mitzy Johnson

Guests: Mark Clark, Susan Diehl, Anna Dill, Steve Elder, Nicholas Fitzkee, David Jones, Laura Moran, Ian Munn, Rosa Nigro, Rubin Shmulsky, Kim Walters, Molly Zuckerman

Swortzel called the meeting to order at 1:30 p.m. on Friday, October 17, 2014 in room 324 of the Student Union. Swortzel welcomed all of the committee members and welcomed the two new committee members, Chien Yu and Andy Perkins. Swortzel reported on the findings of a subcommittee he appointed to address what are the characteristics of a passed contingent proposal, a tabled proposal and a rejected proposal. Members of the subcommittee are Kari Babaski-Reeves, Mike Cox, Dana Franz, Mitzi Johnson, Bob Otondo, and Kathy Sherman-Morris. A draft of the subcommittee report was presented to the UCCC members, and a copy is attached to the minutes. Swortzel asked UCCC members to review the report and offer feedback at the November meeting.

Welch moved to approve the addition of AN 4323/6323 Plagues and People. Hunt seconded the motion. Dr. Molly Zuckerman appeared in support of the proposal. The motion to approve AN 4323/6323 Plagues and People was approved unanimously.

Carr moved to approve the addition of CH 8613 Methods of Biophysical Chemistry. Rigsby seconded the motion. Dr. Nicholas Fitzkee appeared in support of the proposal. Committee members were concerned that this course is similar to a course already being offered by Biochemistry; there was not a letter of support from the Biochemistry Department; the breakdown of contact hours was not sufficient; and the syllabus did not contain adequate content. Dr. Fitzkee confirmed that a letter of support was not requested from Biochemistry. Committee members had an extensive discussion about whether the proposal needed to be reviewed and revised by the college or departmental curriculum committee. Rigsby moved to table the proposal, and Welch seconded the motion. The motion to table CH 8613 Methods of Biophysical Chemistry was approved with one committee member voting nay and one committee member abstaining.

Moore moved to approve the addition of FLH 3013 Plato; FLL 3111 Latin Prose Composition I; FLL 3121 Latin Prose Composition II; FLL 3131 Latin Prose Composition III; FLL 3173 Augustan Literature; and FLL 4443 Caesar. Cox seconded the motion. Dr. Mark Clark appeared in support of the proposals.

Committee members were concerned that the grading scale is weighed depending on how much Latin a student had previously taken and this will be difficult to administer; the prerequisites are not included on the proposal cover sheets; the method of delivery for FLH 3013 Plato is incorrect; and on FLL 3131 there is a typographical error on the proposal that says there will be two tests given but three tests are listed. Moser moved to pass FLH 3013, FLL 3111, FLL 3121, FLL 3131, FLL 3173 and FLL 4443 contingent upon the above concerns being addressed. Welch seconded the motion to pass contingent. The motion to pass contingent was approved unanimously.

Riggins moved to approve the addition of FLS 2233 Spanish for Professionals. Sherman-Morris seconded the motion. Committee members were concerned there was no letter of support from the Department of Classical and Modern Languages and Literatures; the student research paper is to be written in English instead of Spanish; and the title of the course does not adequately describe the course. Carr moved to reject FLS 2233 Spanish for Professionals, and Rigsby seconded the motion. The motion to reject was approved with one committee member abstaining.

Carr moved to approve FLI 1113 Italian I, FLI 1123 Italian II, FLI 2133 Italian III and FLI 2143 Italian IV as general education courses. Moser seconded the motion. Dr. Rosa Nigro appeared in support of the proposals. The motion to approve passed unanimously.

Pilkinton moved to approve the addition of FLI 1800 Italian Study Abroad. Harland seconded the motion. Dr. Rosa Nigro appeared in support of the proposal. The motion to approve passed unanimously.

Rigsby moved to approve FIN 4111/6111 TVA Panel 1 and FIN 4112/6112 TVA Panel II. Moore seconded the motion. Committee members were concerned that the additional graduate requirements were not part of the proposal. A committee member pointed out that the graduate requirements box did not appear as part of the online proposal because the split level designation activates it, and the split level designation was not working when this proposal was submitted. The graduate requirements can be entered under the additional information box. Welch moved to approve FIN 4111/6111 and FIN 4112/6112 contingent upon the above concern being addressed. The motion to approve passed unanimously.

Carr moved to approve the modifications of ASE 3213 Mechanics of Deformable Structures and ASE 3223 Aerospace Structural Analysis. Moore seconded the motion. Committee members pointed out the two courses were trading course titles and course descriptions, and this level of course change should be addressed in a different way. Welch moved to table ASE 3213 and ASE 3223. Carr seconded the motion. The motion to table passed unanimously.

Stewart moved to approve the modification of the Bachelor of Science in Biological Engineering and the Bachelor of Science in Biological Engineering with a Biomedical Engineering concentration. Cox seconded the motion. Dr. Steve Elder appeared in support of the proposals. The motion to approve the program proposals was approved unanimously.

Rigsby moved to approve addition of LSK 1043 Life Skills for Student Athlete and LSK 1102 Academic Learning Strategies for Math. Moore seconded the motion. Dr. Anna Dill, Ms. Laura Moran, and Ms. Kim Walters appeared in support of the proposal. Committee members pointed out the course outlines and the example schedules do not match. Stewart moved to pass LSK 1043 and LSK 1102 contingent upon the above concern being addressed. The motion to pass contingent was approved with one

committee member abstaining.

Pilkinton moved to approve the modification to the Master of Science in Instructional Technology, the addition of distance education to the Master of Science in Instructional Technology, the modification of the Ph.D. in Instructional Systems and Workforce Development, and the addition and the addition of distance delivery to TKT 8443, TKT 8523, TKT 8533, TKT 8543, TKT 8623, TKT 8643, TKT 8693, TKT 8703, TKT 8713, TKT 8723, TKT 8743, TKT 8793, TKT 8813, TKT 8823, TKT 8843, and TKT 8853. Cox seconded the motion. Committee members were concerned there were quizzes and exams not included in the grading scale; some of the 8000 level courses contained principle and foundations materials that should be in lower level courses; there are few prerequisites for the 8000 level classes; the contact hour breakdown is not sufficient; and the number of contact hours on a structured discussion board are high. Hunt moved to pass the program and course proposals contingent upon the above concerns being addressed. Rigsby seconded the motion. The motion to pass contingent was approved with one member abstaining.

Hunt moved to approve the modifications to FP 1103, FP 3012, FP 4023/6023, FP 4113/6113, FP 4143/6143, FP 4213/6213, FP 4253/6253; the deletion of FP 4313/6313, FP 4323/6323, FP 4423/6423; the addition of SBP 1203, SBP 2123, SBP 3113, SBP 3123, SBP 3143, SBP 4133/6133, SBP 4153/6153, SBP 4243/6243, SBP 4263/6263, SBP 4313/6313, SBP 4333/6333, SBP 4443, SBP 4450; the addition of SBP 2012 and the addition of Maymester to SBP 2012; and the addition of a Bachelor of Science in Sustainable Bioproducts. Rigsby seconded the motion. Dr. Ian Munn, Dr. David Jones, Dr. Rubin Shmulsky, and Dr. Susan Diehl appeared in support of the proposals. Committee members were concerned there were so many elective hours within the Bachelor of Science program proposal; there are few prerequisites for upper level classes, so students may not have the foundation necessary for the more difficult classes; leadership in some classes is counted as part of the grade and it is not explained how that would be evaluated; courses such as physics, organic chemistry, and biochemistry are not part of the program; in the lecture/lab classes there may not be enough contact hours since many of the hours are for review for exams; and there may not be enough academic rigor in the first two years of the program. Carr moved to table the proposals, and Stewart seconded the motion. The motion to table passed unanimously.

The proposals for adding distance education to EDE 3233 Teaching Children's Literature at the Elementary and Middle Levels, adding distance education to EDE 3343 Teaching Adolescent Literature, the deletion of EDS 9603 Practicum in College Teaching of Secondary Education, and the deletion of EDX 4423 Teaching the Disadvantaged Child are continued to the November 21st agenda.

Sherman-Morris moved to adjourn the meeting. Rigsby seconded the motion. The motion to adjourn passed unanimously.

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Ag & Life Sciences **Department:** Human Sciences

Contact Person: Joe Wilmoth **Mail Stop** 9745 **E-mail:** jwilmoth@humansci.msstate.edu

Nature of Change: Modify **Date Initiated:** 12/9/13 **Effective Date:** Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
HS	8823	Advanced Theories of Human Development and Family Relations	(3)

Current Catalog Description:

Three hours lecture. Advanced study of theories of human development and family relations across the lifespan.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
HS	8823	Theories of Human Development and Family Studies	(3)

New or Modified Catalog Description:

Three hours lecture. Study of theories of human development and family studies across the lifespan.

Approved: Michael E. Newman	*Date:*	9-3-14
Department Head		
Lu Ellen-Dee-Staton		9-3-14
Chair, College or School Curriculum Committee		
S M Willi		9/3/14
Dean of College or School		
Chair, University Committee on Courses and Curricula		
Chair, Graduate Council (if applicable)		
Chair, Deans Council		

COURSE MODIFICATION

1. CATALOG DESCRIPTION

Current Description: HS 8823. Advanced Theories of Human Development and Family Relations. (3) Advanced study of theories of human development and family relations across the lifespan.

New Description: HS 8823. Theories of Human Development and Family Studies. (3) Study of theories of human development and family studies across the lifespan.

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

   a. The name is changed, with the word "advanced" deleted and the word "relations" changed to "studies."
   b. The word "advanced" is deleted, and the word "relations" is changed to "studies."

3. JUSTIFICATION AND LEARNING OUTCOMES
   a. Justification

      The original name of the course did not reflect the reality of covering a wide range of theories over the course of one semester, so the word "advanced" is being deleted. Changing the word "relations" to "studies" better reflects terminology in the field and in the degree program.

   b. Learning Outcomes

      1. Understand major theoretical approaches to lifespan development.
      2. Understand the various biopsychosocial factors that affect development.
      3. Understand the major issues and tasks faced at different points in the lifespan.
      4. Understand major family theories.
      5. Understand family dynamics and patterns of interaction.
      6. Understand the systemic nature of the family.
      7. Understand the basic core tasks that must be accomplished by all families.
      8. Become familiar with issues faced by families across the life cycle.
      9. Understand the nature and causes of family dysfunction.

4. ADDITIONAL INFORMATION

   a. COURSE SYMBOL: Course symbols are not being modified.

   b. COURSE NUMBER: There will be no change to the course number

   c. COURSE TITLE: The new course title is "Theories of Human Development and Family Studies."

d. CREDIT HOURS: There is no change in credit hours (3 hours).

e. PREREQUISITE: There will be no change in the prerequisite for this course (no prerequisites).

f. METHODS/HOURS OF INSTRUCTION: No change in methods of instruction.

- Detailed Course Outline (45 contact hours)
  - Introduction: What is a theory? Uses and values of theories. Key issues in the study of human development (3 contact hours)
  - Piaget's cognitive theory (3 contact hours)
  - Freud's psychosexual theory (3 contact hours)
  - Erikson's psychosocial theory (3 contact hours)
  - Vygotsky's sociocultural theory (3 contact hours)
  - Behaviorism (3 contact hours)
  - Social learning theory (3 contact hours)
  - Attachment theory (3 contact hours)
  - The systems framework (3 contact hours)
  - Bowen's family systems theory (3 contact hours)
  - Minuchin's structural theory
  - Olson's circumplex model (1.5 contact hours)
  - Beaver's Timberlawn model (1.5 contact hours)
  - Symbolic interactionism (3 contact hours)
  - Family life course development framework (3 contact hours)
  - Exchange theory (1.5 contact hours)
  - Conflict theory (1.5 contact hours)

g. METHOD OF DELIVERY: There will be no modification to the method of delivery.

h. COURSE DESCRIPTION: The course description will be modified to be consistent with the change in the course title.

i. COURSE CONTENT: There is no change in the course content.

5. METHOD OF EVALUATION

Please refer to the attached sample course syllabus for an explanation of the evaluation methods. Following is a summary of evaluation methods:

- Human Development Critical Analysis Paper—100 points
- Family Theory Analysis Paper—100 points
- Exam 1 – 100 points
- Exam 2 – 100 points

6. SUPPORT

- Adequate resources are currently available to support this course.
- A letter of support from the School of Human Sciences Curriculum Committee is attached to this proposal.

7. EFFECTIVE DATE

   Fall Semester 2015

8. PLANNED FREQUENCY

   Once a year: Fall semesters

9. PROPOSED 24 CHARACTER ABBREVIATION

   THEORIES IN HDFS

10. PROPOSED SEMESTER EFFECTIVE

    Fall 2015

11. PROPOSAL CONTACT PERSON

Joe D. Wilmoth
School of Human Sciences
jwilmoth@humansci.msstate.edu
Mail Stop 9745
662-325-1799

HS 8823 Advanced Theories of Human Development & Family Relations
Fall 2014

Schedule: Thursday, 2:00 – 4:50

Location: 210 Lloyd-Ricks-Watson

Instructors: Tommy M. Phillips, Ph.D.

Email: tp319@msstate.edu

Telephone: (662) 325-0655

Office: 203 Lloyd-Ricks-Watson

Catalog Description

Advanced study of theories human development and family relations across the lifespan.

Purpose

This is a graduate-level course that has been developed to enable the student to acquire an in-depth understanding of: (1) human development across the lifespan, including major theories of development, key issues in development, and biopsychosocial factors influencing development, and (2) select theories of family interaction, the systemic nature of the family, and the influence of the family on individual family members.

Course Objectives

Upon completion of the course, students will be able to:

1. Understand major theoretical approaches to lifespan development.
2. Understand the various biopsychosocial factors that affect development.
3. Understand the major issues and tasks faced at different points in the lifespan.
4. Understand major family theories.
5. Understand family dynamics and patterns of interaction.
6. Understand the systemic nature of the family.
7. Understand the basic core tasks that must be accomplished by all families.
8. Become familiar with issues faced by families across the life cycle.
9. Understand the nature and causes of family dysfunction.

Required Texts

White, J. M., & Klein, D. M. (2008). *Family Theories* (3rd edition). Los Angeles: Sage Publications.

Miller, P. (2009). *Theories of Developmental Psychology* (5th edition). New York: Worth Publishers

Other readings as assigned. Other required readings will be posted in myCourses.

Journal articles as assigned.

Course Topics

Topics to be covered include, but are not limited to:

- What is a theory?
- The uses and value of theories
- Key issues in the study of human development
- Piaget's theory of cognitive development
- Freud's psychosexual theory
- Erikson's psychosocial theory
- Vygotsky's socio-cultural theory
- Behaviorism
- Social learning theory
- Attachment theory
- Family systems theory
- Bowen's family systems theory
- Minuchin's structural theory
- Social exchange theory
- Symbolic interactionism
- Conflict theory
- Family life course development framework

Expectations

The student is expected to:

1. Actively participate in class.
2. Read all assigned materials before class.
3. Successfully complete exams.
4. Successfully complete written assignments.
5. Check MSU e-mail account regularly.
6. Follow MSU's Honor Code.

A Word of Caution

This is a graduate-level course. As such, you can expect the reading load and the course requirements to exceed those typical of undergraduate courses. Concurrently, higher quality work is expected of graduate students.

Assessment of Student Progress

Note: Unexcused late submission of exams and assignments will cost you 10% of total for each day late and will not be accepted after 5 days (result will be a zero for that assignment).

1. **Human Development Critical Analysis Paper (100 points)**

   - Each student will select two specific theories of human development (e.g., Erikson's psychosocial theory, social learning theory) and, in addition to discussing the strengths and weaknesses of each, compare, contrast, and evaluate the two chosen theories in terms of the following:
     - Mechanism, organicism, contextualism
     - The relative importance attributed to the influence of nature (heredity/genetics) vs. nurture (environmental factors)
     - The extent to which each theory views development as a continuous vs. discontinuous process

   This paper should consist of 10-15 pages of text. You must use at least 5 references. Your textbook can be used as one reference, and you may use a maximum of one reputable website as a reference. Use APA format and include a title page and reference list.

2. **Family Theory Analysis Paper (100 points)**

   Paper

   Select two of the theories listed below.

   - Social Exchange Theory
   - Symbolic Interaction
   - Family Systems Theory
   - Family Life Course Development Framework
   - Conflict Theory
   - Bowen's Family Systems Theory
   - Minuchin's Structural Theory

   Write a paper in which you do the following:
   1. Discuss each theory's major principles, ideas, and concepts.
   2. Discuss the similarities and differences between the two theories.
   3. Discuss the strengths and weaknesses of each theory.
   4. Discuss the practical implications and applications of each theory. In other words, talk about how each theory can be used in the real-world settings (and not just in therapeutic settings).

   Use APA style for your paper.

   Page length: 10-15 pages of text (Times New Roman; 12 point; margins of 1" on the top, bottom, and sides; and double spacing). Include a title page and reference list. You must use at least 5 references. Your textbook can be used as one reference, and you may use a maximum of one reputable website as a reference.

3. **Examinations** (100 points each)

   - Mid-Term Examination (Emphasis: Human Development)
   - Final Examination (Emphasis: Family)

Grading Scale

A = 90% of possible points
B = 80% of possible points
C = 70% of possible points
D = 60% of possible points
F = Less than 60% of possible points

Academic Misconduct

See MSU policy at: http://www.msstate.edu/dept/audit/1207A.html

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information, visit: http://students.msstate.edu/pdf/honor-code.pdf

TENTATIVE CLASS SCHEDULE

Note: Although every effort will be made to conform to the schedule, dates may change as necessary at the discretion of the instructor.

Date		Reading
8/21	What is a theory? Uses and values of theories; Key issues in the study of human development	Chapter 1 – Miller
8/28	Piaget's cognitive theory	Chapter 2 – Miller
9/4	Freud's psychosexual theory	Chapter 3 – Miller
9/11	Erikson's psychosexual theory	Chapter 3 – Miller
9/18	Vygotsky's sociocultural theory	Chapter 4 – Miller
9/25	Behaviorism	To be determined
10/2	Social learning theory	Chapter 5 – Miller
10/9	Attachment theory	Chapter 7 – Miller; other readings in myCourses
10/16	The systems framework	Chapter 6 – White & Klein
10/23	No class	Fall break
10/30	Bowen's family systems theory; Minuchin's structural theory	Readings in myCourses
11/6	Olson's circumplex model; Beavers Timberlawn model	Readings in myCourses
11/13	Symbolic interactionism	Chapters 3 & 4 -- White & Klein
11/20	Family life course development framework; Conflict theory	Chapters 5 & 7 -- White & Klein
11/27	No class	Thanksgiving

HS 8823 Theories of Human Development & Family Studies
Fall 2015

Schedule: TBA

Location: TBA

Instructors: TBA

Email: TBA

Telephone: TBA

Office: TBA

Catalog Description

Three hours lecture. Study of theories of human development and family studies across the lifespan.

Purpose

This is a graduate-level course that has been developed to enable the student to acquire an in-depth understanding of: (1) human development across the lifespan, including major theories of development, key issues in development, and biopsychosocial factors influencing development, and (2) select theories of family interaction, the systemic nature of the family, and the influence of the family on individual family members.

Course Objectives

Upon completion of the course, students will be able to:

1. Understand major theoretical approaches to lifespan development.
2. Understand the various biopsychosocial factors that affect development.
3. Understand the major issues and tasks faced at different points in the lifespan.
4. Understand major family theories.
5. Understand family dynamics and patterns of interaction.
6. Understand the systemic nature of the family.
7. Understand the basic core tasks that must be accomplished by all families.
8. Become familiar with issues faced by families across the life cycle.
9. Understand the nature and causes of family dysfunction.

Required Texts

White, J. M., & Klein, D. M. (2008). *Family Theories* (3rd edition). Los Angeles: Sage Publications.

Miller, P. (2009). *Theories of Developmental Psychology* (5th edition). New York: Worth Publishers

Other readings as assigned. Other required readings will be posted in myCourses.

Journal articles as assigned.

Course Topics

Topics to be covered include, but are not limited to:

- What is a theory?
- The uses and value of theories
- Key issues in the study of human development
- Piaget's theory of cognitive development
- Freud's psychosexual theory
- Erikson's psychosocial theory
- Vygotsky's socio-cultural theory
- Behaviorism
- Social learning theory
- Attachment theory
- Family systems theory
- Bowen's family systems theory
- Minuchin's structural theory
- Social exchange theory
- Symbolic interactionism
- Conflict theory
- Family life course development framework

Expectations

The student is expected to:

1. Actively participate in class.
2. Read all assigned materials before class.
3. Successfully complete exams.
4. Successfully complete written assignments.
5. Check MSU e-mail account regularly.
6. Follow MSU's Honor Code.

A Word of Caution

This is a graduate-level course. As such, you can expect the reading load and the course requirements to exceed those typical of undergraduate courses. Concurrently, higher quality work is expected of graduate students.

Assessment of Student Progress

Note: Unexcused late submission of exams and assignments will cost you 10% of total for each day late and will not be accepted after 5 days (result will be a zero for that assignment).

1. **Human Development Critical Analysis Paper (100 points)**

   - Each student will select two specific theories of human development (e.g., Erikson's psychosocial theory, social learning theory) and, in addition to discussing the strengths and weaknesses of each, compare, contrast, and evaluate the two chosen theories in terms of the following:
     - Mechanism, organicism, contextualism
     - The relative importance attributed to the influence of nature (heredity/genetics) vs. nurture (environmental factors)
     - The extent to which each theory views development as a continuous vs. discontinuous process

   This paper should consist of 10-15 pages of text. You must use at least 5 references. Your textbook can be used as one reference, and you may use a maximum of one reputable website as a reference. Use APA format and include a title page and reference list.

2. **Family Theory Analysis Paper (100 points)**

   Paper

   Select two of the theories listed below.

   - Social Exchange Theory
   - Symbolic Interaction
   - Family Systems Theory
   - Family Life Course Development Framework
   - Conflict Theory
   - Bowen's Family Systems Theory
   - Minuchin's Structural Theory

   Write a paper in which you do the following:
   1. Discuss each theory's major principles, ideas, and concepts.
   2. Discuss the similarities and differences between the two theories.
   3. Discuss the strengths and weaknesses of each theory.
   4. Discuss the practical implications and applications of each theory. In other words, talk about how each theory can be used in the real-world settings (and not just in therapeutic settings).

   Use APA style for your paper.

   Page length: 10-15 pages of text (Times New Roman; 12 point; margins of 1" on the top, bottom, and sides; and double spacing). Include a title page and reference list. You must use at least 5 references. Your textbook can be used as one reference, and you may use a maximum of one reputable website as a reference.

3. **Examinations** (100 points each)

   - Mid-Term Examination (Emphasis: Human Development)
   - Final Examination (Emphasis: Family)

Grading Scale

A = 90% of possible points
B = 80% of possible points
C = 70% of possible points
D = 60% of possible points
F = Less than 60% of possible points

Academic Misconduct

See MSU policy at: http://www.msstate.edu/dept/audit/1207A.html

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information, visit: http://students.msstate.edu/pdf/honor-code.pdf

TENTATIVE CLASS SCHEDULE

Note: Although every effort will be made to conform to the schedule, dates may change as necessary at the discretion of the instructor.

Week		Reading
1	What is a theory? Uses and values of theories; Key issues in the study of human development	Chapter 1 – Miller
2	Piaget's cognitive theory	Chapter 2 – Miller
3	Freud's psychosexual theory	Chapter 3 – Miller
4	Erikson's psychosocial theory	Chapter 3 – Miller
5	Vygotsky's sociocultural theory	Chapter 4 – Miller
6	Behaviorism	To be determined
7	Social learning theory	Chapter 5 – Miller
8	Attachment theory	Chapter 7 – Miller; other readings in myCourses
9	The systems framework	Chapter 6 – White & Klein
10	Bowen's family systems theory	Reading in myCourses
11	Minuchin's structural theory	Reading in myCourses
12	Olson's circumplex model; Beavers Timberlawn model	Readings in myCourses
13	Symbolic interactionism	Chapters 4 -- White & Klein
14	Family life course development framework	Chapter 5 -- White & Klein
15	Exchange Theory; Conflict theory	Chapters 3 & 7 – White & Klein

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Arts & Sciences **Department:** Chemistry

Contact Person: Nicholas Fitzkee **Mail Stop:** 9573 **E-mail:** nfitzkee@chemistry.msstate.edu

Nature of Change: Add **Date Initiated:** 10/23/13 **Effective Date:** 01/01/16

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
			( )

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
CH	8613	Methods in Biophysical Chemistry	(3)

New or Modified Catalog Description:

Three hours lecture. Discussion of the physical methods and conceptual models used to describe the behavior of biological macromolecules and biochemical reactions.

Approved: Glen A. Lewis **Department Head**	*Date:* 9/24/2014
Donna Nordan **Chair, College or School Curriculum Committee**	9-25-14
Dean of College or School	9-20-14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Chemistry

University Committee on Courses and Curriculum (UCCC)
Mississippi State University

September 23, 2014

To whom it may concern:

The chemistry department's graduate affairs committee reviews all curricular and policy changes to the department's graduate program and proposes any needed changes to the full faculty of the department.

Dr. Nick Fitzkee has proposed a new graduate course "*Methods in Biophysical Chemistry* (CH 8613)". The new course has been discussed at length and the final documents were approved for submission (by unanimous vote) to UCCC. We are confident that the proposed course will substantially improve our graduate program and I hope you will look favorably upon this application.

Committee members:

Dr. Stephen C. Foster (Chairperson)

Dr. T. Keith Hollis

Dr. Edwin A. Lewis

Dr. Todd Mlsna

Dr. Charles Edwin Webster

1115 Hand Lab • Box 9573 • Mississippi State, MS 39762 • PHONE: 662-325-3586 • FAX: 662-325-1618
www.msstate.edu/dept/chemistry

MISSISSIPPI STATE
UNIVERSITY
Department of Chemistry

October 26, 2014

Kirk Swortzel, Ph.D.
Chair, University Committee on Courses & Curricula
Mississippi State University
P.O. Box 9731
Mississippi State, MS 39762-9731

Dear Dr. Swortzel:

Please find attached my revised course addition application for CH 8613, "Methods in Biophysical Chemistry." At the committee's request, I have included an addendum to the application packet: a letter from Dr. Jeff Dean, the head of the Department of Biochemistry, Molecular Biology, Entomology, and Plant Pathology. Dr. Dean and I had a good discussion, and we found no overlap between my proposed course and what is being taught in his department. I hope you will please pass along this information to the other committee members.

Thank you once again for your work on the UCCC. While I was reluctant to meet with Dr. Dean at first, I enjoyed meeting him and finding an additional advocate for graduate biochemistry training on the MSU campus. Please let me know if there is any additional information I can provide regarding this course.

Sincerely,

Nicholas Fitzkee

Nicholas C. Fitzkee, Ph.D.
Assistant Professor of Chemistry
nfitzkee@chemistry.msstate.edu
(662) 325-1288

MISSISSIPPI STATE
UNIVERSITY™

Biochemistry, Molecular Biology,
Entomology, and Plant Pathology

October 24, 2014

Dr. Kirk Swortzel, Chair
University Committee on Courses and Curricula
Mississippi State University

Re: Proposed Course – CH8613 "Methods in Biophysical Chemistry"

Dear Kirk:
With this letter I wish to confirm to you and the rest of the UCCC that the Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology (BCH-EPP) has now had an opportunity to review the proposed course (CH8613 "Methods in Biophysical Chemistry") and its content, and that I have personally had the opportunity to speak with Dr. Nick Fitzkee, the instructor of the proposed course, about how it fits with curricula in both this department and the Department of Chemistry. We (the BCH-EPP faculty) are satisfied that this new course will synergize with the graduate courses offered in our department and that there is minimal overlap with current or future planned courses in the department. Consequently, we support approval of this new course by the UCCC.

Thank you and the committee for calling our attention to Dr. Fitzkee's application. We look forward to having him work with those of our students for whom this proves to be a useful courses in the academic development.

With sincere regards,

Jeffrey F.D. Dean
Professor and Head

Course Addition

Addition of the New Course *Methods in Biophysical Chemistry* (CH 8613)

Department of Chemistry

1. Catalog Description

CH 8613. Methods in Biophysical Chemistry. (3) Three hours lecture. Discussion of the physical methods and conceptual models used to describe the behavior of biological macromolecules and biochemical reactions.

2. Detailed Course Outline

I. Introduction to biological macromolecules **(3 contact hours total)**
   A. Protein structure – *2 hours*
   B. DNA/RNA structure – *1 hour*

II. Using models to describe biological systems **(3 contact hours total)**
   A. Review of experimental error – *1 hour*
   B. Fitting models to data – *1 hour*
   C. Uncertainties of model parameters – *1 hour*

III. Chemical interactions in biological macromolecules **(6 contact hours total)**
   A. Molecular forces – *2 hours*
   B. Protein and DNA stabilization – *1 hour*
   C. Computational simulations of biological macromolecules – *1 hour*
   D. Protein folding – *2 hours*

IV. Statistical models for protein and DNA interactions **(3 contact hours total)**
   A. Review of statistical mechanics – *2 hours*
   B. Binding and helix-coil theory – *1 hour*

V. Absorption spectroscopy applied to proteins and DNA **(14 contact hours total)**
   A. Review of quantum mechanics – *3 hours*
      1. Wave functions and the Schrodinger equation
      2. Interactions between light and matter
   B. UV-Visible spectroscopy – *2 hours*
   C. IR spectroscopy – *2 hours*
   D. Circular-dichroism spectroscopy – *3 hours*
   E. Fluorescence spectroscopy – *4 hours*
      1. Introduction to fluorescence
      2. Fluorescence quenching
      3. Fluorescence energy transfer (FRET)
      4. Fluorescence polarization

VI. NMR Spectroscopy **(8 contact hours total)**
- A. Introduction to NMR – *2 hours*
  1. Chemical shifts and scalar couplings
  2. NMR instrumentation
- B. Fourier transforms and spectral processing – *1 hour*
- C. NMR relaxation and chemical exchange – *1 hour*
- D. Multidimensional NMR spectroscopy – *1 hour*
- E. Assignment of protein NMR spectra – *1 hour*
- F. Structure determination by NMR – *2 hours*

VII. Calorimetry and binding **(2 contact hours total)**
- A. Isothermal Titration Calorimetry (ITC) – *1 hour*
- B. Interpreting ITC binding curves – *1 hour*

VIII. Biomolecular X-Ray crystallography **(6 contact hours total)**
- A. X-Ray diffraction – *3 hours*
- B. The phasing problem and current solutions – *2 hours*
- C. Structure refinement – *1 hour*

Grand Total Contact Hours: 45

3. Method of Evaluation

The goal of this course is to improve the students' critical thinking about protein and DNA structure, physical models, and the methods currently used to analyze biological macromolecules. Evaluation focuses on assessing the students' problem solving skills, and a significant emphasis is placed in their ability to complete homework assignments. Seven assignments are offered throughout the course, and these assignments will be worth 35% of the final grade. In addition, a semester-long programming assignment is assigned at the beginning of the semester, worth 10% of the final grade. Two cumulative exams are given, one in the middle of the semester and one at the end of the class. Both of these exams are worth 20% of the final grade each. Additionally, all students are required to present a journal article relating to the course material. This aspect of the course is designed to enhance the students' ability to evaluate the biophysical literature and to improve their speaking skills. In-class presentations are 20 minutes long, with 5 minutes of questions, and constitute 10% of the students' final grade. An additional 5% is included for attendance. The components of the final grade are summarized in the table below:

Course Component	Weight
Exams (2)	40%
Homework	35%
Computer Program	10%
Presentation	10%
Attendance	5%

Letter grades will be assigned using the standard grading scale:

Final Grade	Final Course Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
59 and below	F

4. Justification and Outcome

Justification

Physical biochemistry is a multidisciplinary field that covers topics in biochemistry, physical chemistry, and analytical chemistry. The specific focus for physical biochemists is the structure and function of biological macromolecules like proteins, DNA, and RNA. Unlike small organic molecules or inorganic compounds, these large macromolecules require consideration that is not covered in undergraduate or graduate courses in the traditional fields of chemistry. For example, NMR spectroscopy can be applied to both small molecules as well as proteins, but the approaches used (and the experimental details) are vastly different. A similar situation arises with molecular crystallography: additional issues arise when considering protein or DNA crystals that are not as important in small molecule work. Thus, this course fills a gap in the current chemistry graduate program curriculum.

A Physical Biochemistry graduate course has been offered in the past. However, it was recently dropped from the course catalog because it had not been offered in some time. At the time Dr. Fitzkee was hired (Fall of 2011), the course had already been dropped. Dr. Fitzkee taught this course as a special topics course in Spring of 2012, and he is teaching it again in Spring of 2014. Dr. Fitzkee's hire reflects an interest in building a strong physical biochemistry program at MSU. When this course was first taught, 12 graduate students were enrolled, and 10 students are currently enrolled in Spring of 2014. Therefore, it is anticipated that this course will be offered on a two year rotation from now on.

Student Outcomes

Students completing this course will experience the following learning outcomes:

1. Students will be able to interpret protein and DNA structures and make informed hypotheses about the molecular interactions responsible for stabilizing those structures.
2. Students will be able to develop models for understanding biomolecular folding and binding, and they will be able to fit the models they develop to experimental data.
3. Students will understand the statistical limitations of biophysical models, and they will be able to express uncertainties in a way that accurately reflects the degree of confidence in their models.
4. Students will know the common spectroscopic methods used to study biological macromolecules, and they will be able to interpret changes in spectra as thermodynamic conditions are varied.

5. Students will understand the experimental methods used to determine protein and DNA structures, as well as their strengths and limitations.
6. Students will develop a working knowledge of a programming language and will be able to apply basic programming skills to analyzing protein and DNA structure.
7. Students will have enhanced presentation skills and will be better equipped to evaluate critical literature in the field of molecular biophysics.

5. Academic Misconduct

The MSU honor code is given in the course syllabus. In addition, the Department of Chemistry requires that graduate students enroll in a Professional Chemistry class (CH 8111) which discusses scientific and academic ethics. One of the major topics of this class is plagiarism and how to cite the work of others appropriately. Therefore, students will understand the consequences of academic misconduct in this course.

To reduce the risk of misconduct, new exams are written specific to each semester. Students are encouraged to work together on homework assignments, but the class size (and the detailed nature of the assignments) allows the instructor to monitor instances where assignments have been copied directly. If academic dishonesty is identified in the proposed course, it will be handled in a manner consistent with MSU policy and procedures.

6. Target Audience

This course is intended for graduate students pursuing degrees in biological or physical chemistry. The Department of Chemistry admits from 10 to 15 graduate students per year. Of these students, approximately one-third are classified as biological or physical chemists. The course will be offered every other year, and it is anticipated that 8 to 12 students will enroll each time it is offered.

7. Support

A letter of support from Dr. Ed Lewis, head of the Department of Chemistry, is attached. The letter indicates that this proposal was considered and unanimously approved by the Chemistry faculty.

8. Instructor of Record

Nicholas C. Fitzkee

9. Graduate Student Requirements

This is not a split-level course; therefore, there are no additional requirements for graduate students.

10. Planned Frequency

The proposed course will be offered during the Spring term of even-numbered years. The first offering will be in the Spring of 2016.

11. Explanation of Duplication

This course differs substantially from the undergraduate "Biophysical Chemistry" course (CH 4403, cross-listed as CH 6403) currently offered in Chemistry. While Dr. Fitzkee teaches both courses, CH 4403 is designed as an introductory course in thermodynamics and kinetics, intended for chemists destined for medical, dental, or pharmacy school. A basic understanding of thermodynamics and kinetics is assumed in this course, and instead the focus is on using the toolbox of physical chemistry to understand biology more deeply.

12. Method of Instruction Code

C – Lecture

13. Method of Delivery

F – Face to Face

14. Proposed CIP Number

26.0206

15. Proposed 24-Character Abbreviation

Methods in Biophys Chem

16. Proposed Semester Effective

Spring 2016

Methods in Biophysical Chemistry – CH 8613
Course Syllabus

Nicholas Fitzkee [nfitzkee (@) chemistry (.) msstate (.) edu]
Office: Hand Lab 3310

Catalog Description

> CH 8613. Methods in Biophysical Chemistry. (3) Three hours lecture. Discussion of the physical methods and conceptual models used to describe the behavior of biological macromolecules and biochemical reactions.

Overview

Many of the advances in modern biochemistry have occurred because of the intense effort scientists have devoted to studying biomolecular function. By applying the principles of physical chemistry to biological systems, we have learned much about the chemistry of life, and we have started to understand the molecular basis of human disease. This class is designed to build upon an undergraduate background in physical chemistry and biochemistry; in it, we will study the behavior of proteins and DNA, and we will learn about several techniques that are commonly used to study biomolecular structure and function. We will also focus on how mathematical models can be used to describe protein and DNA behavior, and we will discuss in depth how those models can be related to experimental observables. When you have completed the course, you will be able to design and interpret experiments for studying biological macromolecules, and you will be able to apply biophysical concepts to understand how these systems work.

Meeting Times / Attendance

The course will meet Monday, Wednesday, and Friday from 11:00 to 11:50 AM in Hand Lab 3324. Because of the interactive nature of the lectures, attendance is mandatory for the course. Please contact the instructor if you must miss a class meeting.

Two exams will be given throughout the course, and these will be scheduled outside of class. The times and dates of these exams will be determined so all students can be present.

Course Format

The primary format for the course will be lecture; however, students will also have an opportunity to present journal-club discussions throughout the course. The lecture notes will be written on the board during the class, and occasionally PowerPoint slides or other visual aids will be used to supplement the course materials. These slides will be made available upon request, but in general you will be responsible for taking your own notes during class.

The journal discussions will occur on most Fridays during the semester. During each class period, two articles will be discussed: an older "classic" article and a newer article describing the current state of biophysics research. Students will be selected to lead a class discussion on one of the two articles, and all students will lead the journal presentation at least once during the semester (more details are given below).

Reading / Textbook

The primary textbook for the class is *Principles of Physical Biohemistry: Principles and Applications in the Biological Sciences* by van Holde, Johnson, and Ho (2006 Pearson Education, Inc., ISBN 0-13-046427-9). In addition, we will use *An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements* by Taylor (1996 University Science Books, ISBN 0-93-570275-X) to discuss models and model fitting. These books are available in the bookstore, but it may be cheaper for you to purchase them online (try www.addall.com). Readings from these books will be assigned throughout the course, and it is expected that you come to class having read the material.

In addition, the following texts may provide helpful information to supplement what is covered in the course. Many of these are classic biophysics text books and are worth having in your library if you plan to continue with biophysical research. You can often find them available used or on-line.

- Tinoco, Sauer, Wang, and Puglisi. (2003) *Physical Chemistry: Principles and Applications in the Biological Sciences.* Prentice Hall, Inc.
- Cantor and Schimmel (1980) *Biophysical Chemistry*. (Parts I, II, and III) W. H. Freeman and Company.
- Rule and Hitchens (2005) *Fundamentals of Protein NMR Spectroscopy*. Springer.
- Rhodes (2006) *Crystallography Made Crystal Clear: A Guide for Users of Macromolecular Models.* Academic Press.
- Glusker and Trueblood (2010) *Crystal Structure Analysis: A Primer*. Oxford.
- Atkins and de Paula. (2009) *Physical Chemistrry*. W. H. Freeman and Company.
- Berg, Tymoczko, and Stryer. (2010) *Biochemistry*. W. H. Freeman and Company.

Grade Distribution

The grades for the course will be calculated according to the table below.

Course Component	Percentage
Exams (2)	40%
Homework (7)	35%
Programing Assignment	10%
In-Class Presentation(s)	10%
Attendance	5%

Details for these items are given on the following pages. Letter grades will be assigned using the standard grading scale:

Final Grade	Final Course Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
59 and below	F

Exams

Two exams will be given during the semester. Although referred to as a "midterm" and a "final," the exams will not be cumulative. Each exam will count 20% toward your final grade. The exam format may be varied, and you should not expect the exams to be entirely multiple-choice. Because of the limited class time available for exams, the exams will be given during the evening, at a time that is convenient for all students in the class. Exams will be given in Hand Lab 3324, and you will have two hours to complete each exam. While the emphasis of each exam will be the material presented during class, you will also be tested on the assigned readings, including the journal presentations. There will be no cumulative final exam for the class.

Homework

Throughout the course, you will have seven bi-weekly problem sets to test you on the material taught. You will also have a long-term computer-based assignment to ensure that you learn a programming language. These assignments are graded and constitute 45% of your final course grade. Assignments will be graded on both completeness and correctness: for a majority of the problems, you will receive credit if you have shown effort and are mostly correct. Because of this, you should show all your work so that the instructor can follow your line of reasoning.

The first assignment (HW0) will be a programming assignment that requires you to learn a programming language to parse and process a PDB structure file. You will have two months to complete this assignment, and if you do not know how to program, you should begin learning *immediately*.

Sloppy or illegible homework assignments will not be given credit! You are responsible for submitting assignments that are easy to follow with justification given for each answer. If you cannot write legibly, type your answers. If there are large portions of your assignment that are crossed out or out of order, re-copy it to make it neater and easier to follow. Your assignments should be organized and stapled when you come to class.

The assignments will be collected at the beginning of the class period when they are due (see the schedule below). Late assignments will not be accepted unless prior arrangements have been made with the instructor.

Presentations

Several times during the semester, students will be required to lead a journal article discussion. These discussions will occur on Fridays, and two articles will be discussed during the lecture. The journal article discussions have several goals: First, for the presenter, it is a valuable opportunity to develop public speaking and teaching skills. Second, it is a chance to see where current work in molecular biophysics is directed. Finally, it is a chance to look back at several classic papers and understand the context leading up to significant discoveries in biophysics.

The rubric for grading journal article presentations is attached at the end of the syllabus. The presentation grade will account for 15% of your final grade, and if you present multiple time, your presentation grades will be averaged. Depending on the size of the class, some students may present multiple times. If you have presented more than twice, your lowest presentation grade will be dropped from the average.

You are welcome to present your journal articles however you like: if you are comfortable using PowerPoint slides, a computer will be made available to you (or you can bring your own computer). Alternatively, if you'd like to lead a discussion from the board, that's okay too, although it is recommended that you select some figures from the articles to discuss using the overhead display. Either way, **your presentation should last 15-20 minutes with 5-10 minutes additional for discussion.**

On the flip side, you should come to journal club having read the material deeply. Simply skimming the journal articles is not sufficient! The material covered in the journal articles will appear on your exams, regardless of whether the speaker has done a satisfactory job of presenting the material. I reserve the right to call on students directly if no one is willing to participate in discussion afterward.

Attendance

Attendance constitutes 5% of the final grade. Students are expected to arrive on time for lectures and stay through the entire lecture unless prior arrangements have been made with the instructor. Arriving more than 5 minutes late constitutes an ½ absence, arriving more than 30 minutes late constitutes a full absence. Two unexcused absences are permitted, after which the instructor will deduct 0.5% of the final grade for each absence, up to a total of 5% of the student's final grade. Excused absences do not count against the student. For more information on the absence policy, please see http://www.policies.msstate.edu/policypdfs/1209.pdf.

Office Hours

Office hours are by appointment. You are welcome and encouraged to stop by my office to discuss the course material at any time, but I may need to reschedule our meeting if I am busy.

Course Web Page

The web page for this course is located at http://fitzkee.chemistry.msstate.edu/ch8990/. Please check this site frequently for course updates. You will be able to find PDF copies of this syllabus and other important course materials at this site.

Academic Integrity

Group work and collaboration is encouraged in this course, but all students are expected to complete their own assignments and submit their own work. Failure to do so not only cheats the system, but also diminishes your own understanding of the material. Instances of plagiarism and cheating will be addressed according to the Student Honor Code. In severe cases of academic dishonesty, students will be dropped from the class with an XF grade and will be required to take a class in academic integrity to have the "X" sanction removed. You are encouraged to read the Student Honor Code, available on the Honor Code Office website, http://www.honorcode.msstate.edu/.

Supplemental Reading

In the course schedule on the following pages, several places indicate additional reading to be completed before lecture (e.g "Reading #1"). These readings represent important papers that you should understand in addition to your textbooks. In most cases, you will be able to download these documents from the web; however, in some cases where a digital copy is not readily available you will receive a PDF of the document via email.

The list of readings is given below:

1. Kuriyan, Konforti, and Wemmer. *The Molecules of Life*, Chapter 1. Available for free at the Garland Science website: http://www.garlandscience.com/product/isbn/9780815341888

2. Johnson, M. L. (1992) *Anal. Biochem.* **206**: 215.

3. Dill, K. A. (1990) *Biochemistry.* **29**: 7133.

4. Rose, G. D., *et al.* (2006) *PNAS.* **103:** 16623.

5. Dill, K. A. and Chan, H. S. (1997) *Nat. Sturct. Biol.* **4:** 10.

6. Zanni, M. T., and Hochstrasser, R. M. (2001) *Curr. Op. Struct. Biol.* **11**: 516.

7. Wütrich, K. (2003) *J. Biomol NMR.* **27**: 13.

8. Lewis, E. A. and Murphy, K. P. (2005) *Meth. Mol. Biol.* **305:**1.

9. Cantor and Schimmel. *Biophysical Chemistry Part II: Techniques for the Study of Biological Structure and Function*. Chapter 13. Will be provided in class.

Additional readings may be assigned throughout the course.

JOURNAL PRESENTATION RUBRIC

Methods in Biophysical Chemistry – CH 8613

Category	Evaluation Criteria	Max. Score	Student Score
Presentation Content	**Presentation Fidelity** • Student understands questions asked by the article • Student can explain at least one (preferably two or more) figures from the article	20	
	Presentation Emphasis • Background: not too much, not too little • Student focuses on important topics: figure, tables, etc. • Less time is spent on unimportant details / methodology	10	
	Scientific Accuracy • At least one reference to course material • No scientific inaccuracies in the presentation	15	
	Organization • Presentation flows logically • Clear introduction and summary of what is covered	5	
Speaking Skills	**Speaker Clarity** • Speaker doesn't mumble, projects and is easily understood • Speaker doesn't simply read the slides	10	
	Spoken English • Speaker shows a command of the English language • No grammatical problems with spoken English	5	
Technical Merit	**Presentation Mechanics** • Slides are appropriately chosen and helpful to audience • Talk flows smoothly; no abrupt transitions • Presentation does not go over time (15-20 minutes)	10	
	A/V Aids • No complete sentences on slides • Handwriting is clear (for written talks) • Images are clear and professional, with pixelated images • Student shows mastery of presentation software	10	
Audience Interaction	**Question and Answer Session** • Student can candidly answer questions about the paper • Student is polite and receptive to audience feedback • Student can facilitate a discussion if no questions are forthcoming	10	
	Real-Time Response to Audience • Student recognizes confusion in the audience and addresses it appropriately • Student can elaborate on a slide during the talk if a question arises	5	
Total Score		**100**	

Date Submitted: 10/20/14 4:45 pm

Viewing: PSY 8450 ~~8454~~: Applied Clinical ~~Professional~~ Practicum

Last edit: 10/20/14 4:45 pm

Changes proposed by: ado56

In Workflow

1. 0480 GR Curr. Committee Chair
2. 0480 Head
3. 04 Curr. Committee Chair
4. 04 Dean
5. Provost
6. Banner

Approval Path

1. 11/03/14 2:22 pm kja3: Approved for 0480 GR Curr. Committee Chair
2. 11/03/14 2:29 pm meb636: Approved for 0480 Head
3. 11/06/14 10:28 am dg300: Approved for 04 Curr. Committee Chair
4. 11/09/14 4:28 pm rlt12: Approved for 04 Dean

Title	Applied Clinical ~~Professional~~ Practicum
Proposed 30 Character Abbreviation	Applied Clin ~~Prof~~ Practicum
Subject Prefix	PSY
Course Number	~~8450~~ 8454
Department	Psychology (0480)
College or School	College of Arts & Sciences (04)
Contact Person	Name: Arazais Oliveros; Phone: 6623253202; Email: aoliveros@psychology.msstate.edu

Date Initiated	
Effective Date	Spring 2015
Frequency	~~Fall~~ ~~Spring~~ ~~Summer~~
CIP Number	420101
Campus(es)	Campus 1, Starkville ~~Campus 2, Meridian~~
Distance Learning Course	No
"Maymester" course	No
Core (General Education) Course	No

Course Details

Credit Hours	1-~~4~~ 4
Catalog Description	(Prerequisite: Director of Clinical Training consent). ~~Departmental consent).~~A minimum of one hour ~~300 hours~~ per week (per credit hour registered) in ~~semester of~~ supervised service delivery and research activities of clinical psychologists. ~~professional psychological experience in an appropriate setting.~~

Course Modification

Itemized List and Description of Changes	a. The course title change reflects the current requirements of the clinical psychology program. b. The course description change reflects the current requirements of the clinical psychology program. Our program's accrediting body, the American Psychological Association (APA) has a model of competencies that are expected to be achieved as part of training. While competencies are expected to build with increasing practice, they cannot be assessed completely by the amount of practice one has received. Thus, assessing competencies is a more direct way to assess students, plus it is required by our accrediting body. c. The course is now repeatable, which allows students continuous applied practice as they progress through their doctoral studies. With each enrollment in PSY 8450, the students will obtain applied learning with increased depth/complexity of cases, increased independence, and increased expectations to demonstrate advanced clinical skills. A minimum of 1-credit per semester, up to 4, are to be completed by students starting their second year in the program. So, the expectation is that students may register for different amounts during different semesters. The competencies/learning objectives of the course are expected to build in a developmental sense for students. Students will earn academic credit commensurate with the amount of work that they do in practicum. For example, 1-credit hour involves the expectation for the student to work toward having one active client throughout the semester. When students register for more hours, the expectation increases for client load and the amount of responsibility they have in clinical practicum.

	d. This course was never offered at the Meridian campus and was never intended to be taught at the Meridian campus. The Meridian (campus 02) designation for this course should therefore be deleted.
Course Content	Formal supervision of practicum experience is meant to accomplish the following goals: the development of a professional identity as a clinician; the planning process for client evaluation, intervention, and case management; development of assessment and intervention skills; providing group support and consultation; and ensuring that clients' welfare is maintained throughout the assessment and intervention process. Each student will be expected to accrue clinical hours completing practicum-related activities (e.g., intake/history, diagnostic interview, rating scales, formal testing including IQ/achievement, integrative reports) and clinical research protocols.
Effect on Other Courses	None.
Method of Instruction	Dir. Exp Study, Pract., Co-Op
Method of Delivery	Face to face
Current Course Outline	Proposed Course Outline for PSY 8450 - 9-3-14.docx
Proposed Course Outline	Proposed Course Outline for PSY 8450.docx
Current Syllabus	PSY 8450 Syllabus.docx
Proposed Syllabus	PSY 8450 Applied Clinical Practicum syllabus rev.docx
Method of Evaluation	Student grades are based on points earned in the rating scales that are completed at midterm and end of semester. Out of the total points earned (not counting the items omitted due to "No opportunity" to assess during any particular semester of practicum) the grade will be based on the following percentages: 90-100 = A 80-89.9 = B 70-79.9 = C 60-69.9 = D <60 = F The final grade will be 40% Midterm, 60% Final.

The doctoral program immerses students in research and clinical domains throughout the students' training. Some semesters will be especially research-intensive (e.g., thesis/dissertation data collection) and students will have less time to devote to clinical competency development, at which points they can/should register for 1 course credit. In other semesters, student schedules may permit more time for accruing supervised clinical experiences, at which times they should register for 2-4 credit hours. This course is needed to provide the experience/training required of our graduates and it provides the supervision that is required for any trainee to provide mental health services.

Learning Outcomes	Learning outcomes for the course include Foundational competencies and functional competencies for the profession of psychology. Foundational competencies include

professionalism, relational skills, and Scientific Mindedness.

Professionalism includes:
1. Professional values & attitudes in general and with regard to individual & cultural diversity
2. Knowing/practicing ethical and legal standards & policy
3. Reflective practice/ Self-assessment/ Self-care

Relational skills include
1. Comfort level with affective content in practicum
2. Effective written and verbal communication of ideas feelings

Scientific mindedness includes
1. Understanding of research, research methodology, techniques of data collection and analysis
2. Basic knowledge of biological /cognitive /affective bases of behavior and lifespan development.
3. Respect for scientifically derived knowledge.

Functional competencies include demonstrating basic knowledge and appropriate use of assessment measures, intervention techniques, consultation, supervision, and cross-discipline communication and advocacy.

Students will be rated on all of these competencies at Midterm and Final based on their presentation in supervision, review of taped client sessions, completed reports of assessment or treatment, and any self-reflection exercises completed as part of class.

Academic Misconduct	The honor code is explicitly referenced in the syllabus and potential academic misconduct is addressed.
Target Audience	Graduate students in the Clinical concentration of the PhD program in Psychology.
Instructor of Record	Arazais Oliveros and E. Samuel Winer
Letter of Support	Course proposal letter.pdf
Course reviewer comments	**dg300 (10/12/14 2:24 pm):** Rollback: The proposal was recently reviewed by the College of A&S curriculum committee. Specific concerns that need to be addressed, if any, have been sent to the contact person.

Key: 7069

Date Submitted: 10/30/14 11:22 am

Viewing: PSY 8460 ~~8464~~: Applied External Clinical Practicum ~~Professional Practicum~~

Last edit: 11/06/14 10:29 am

Changes proposed by: sw1388

In Workflow

1. 0480 GR Curr. Committee Chair
2. 0480 Head
3. 04 Curr. Committee Chair
4. 04 Dean
5. Provost
6. Banner

Approval Path

1. 11/03/14 2:23 pm kja3: Approved for 0480 GR Curr. Committee Chair
2. 11/03/14 2:29 pm meb636: Approved for 0480 Head
3. 11/06/14 10:34 am dg300: Approved for 04 Curr. Committee Chair
4. 11/09/14 4:28 pm rlt12: Approved for 04 Dean

Title	Applied External Clinical Practicum ~~Professional Practicum~~
Proposed 30 Character Abbreviation	App Ext Clinical Practicum ~~Prof Practicum~~
Subject Prefix	PSY
Course Number	8460 ~~8464~~
Department	Psychology (0480)
College or School	College of Arts & Sciences (04)
Contact Person	Name: E. Samuel Winer; Phone: 6623253202; Email: e.samuel.winer@msstate.edu

Date Initiated	
Effective Date	Spring 2015
Frequency	~~Fall~~ ~~Spring~~ ~~Summer~~
CIP Number	420101
Campus(es)	Campus 1, Starkville ~~Campus 2, Meridian~~
Distance Learning Course	No
"Maymester" course	No
Core (General Education) Course	No

Course Details

Credit Hours	~~1-4~~ 4
Catalog Description	(Prerequisite: Director of Clinical Training consent). ~~Departmental consent).~~ A minimum of one hour ~~300 hours~~ per week (per credit hour registered) in ~~semester of~~ supervised service delivery and research activities at ~~professional psychological experience in~~ an external site under the supervision of a licensed psychologist. ~~appropriate setting.~~

Course Modification

Itemized List and Description of Changes	a. The course title change reflects the current requirements of the clinical psychology program. b. The course description change reflects the current requirements of the clinical psychology program. c. The course is now repeatable, which allows students continuous applied practice as they progress through their doctoral studies. With each enrollment in PSY 8460, the students will obtain applied learning with increased depth/complexity of cases, increased independence, and increased expectations to demonstrate advanced clinical skills.
Course Content	Formal advanced supervision of an external practicum experience is meant to accomplish the following goals: the development of an advanced professional identity as a clinician in advance of applying for predoctoral internship; the planning process for client evaluation, intervention, and case management; development of assessment and intervention skills; providing group support and consultation; and ensuring that clients' welfare is maintained throughout the assessment and intervention process. Each student will be expected to accrue clinical hours completing practicum-related activities (e.g., intake/history, diagnostic interview, rating scales, formal testing including IQ/achievement, integrative reports) and clinical research protocols.
Effect on Other Courses	None.

Method of Instruction	Dir. Exp Study, Pract., Co-Op Dir. Exp Study, Pract., Co-Op
Method of Delivery	Face to face Face to face
Current Course Outline	Proposed Course Outline for PSY 8460.docx
Proposed Course Outline	Proposed Course Outline for PSY 8460.docx
Current Syllabus	PSY 8460 (3).docx
Proposed Syllabus	PSY 8460 (3).docx
Method of Evaluation	Student grades are based on points earned in the rating scales that are completed at midterm and end of semester. Out of the total points earned (not counting the items omitted due to "No opportunity" to assess during any particular semester of practicum) the grade will be based on the following percentages: 90-100 = A 80-89.99 = B 70-79.99 = C 60-69.99 =D <60 = F The final grade will be 40% Midterm, 60% Final.

The doctoral program immerses students in research and clinical domains throughout the students' training. Some semesters will be especially research-intensive (e.g., thesis/dissertation data collection) and students will have less time to devote to clinical competency development, at which points they can/should register for 1 course credit. In other semesters, student schedules may permit more time for accruing supervised clinical experiences, at which times they should register for 2-4 credit hours. This course is needed to provide the experience/training required of our graduates and it provides the supervision that is required for any trainee to provide mental health services.

Learning Outcomes	Learning outcomes for the course include Foundational competencies and functional competencies for the profession of psychology. Foundational competencies include professionalism, relational skills, and Scientific Mindedness. Professionalism includes: 1. Professional values & attitudes in general and with regard to individual & cultural diversity 2. Knowing/practicing ethical and legal standards & policy 3. Reflective practice/ Self-assessment/ Self-care

	Relational skills include 1. Comfort level with affective content in practicum 2. Effective written and verbal communication of ideas feelings Scientific mindedness includes 1. Understanding of research, research methodology, techniques of data collection and analysis 2. Basic knowledge of biological /cognitive /affective bases of behavior and lifespan development. 3. Respect for scientifically derived knowledge. Functional competencies include demonstrating basic knowledge and appropriate use of assessment measures, intervention techniques, consultation, supervision, and cross-discipline communication and advocacy. Students will be rated on all of these competencies at Midterm and Final based on their presentation in supervision, review of taped client sessions, completed reports of assessment or treatment, and any self-reflection exercises completed as part of class.
Academic Misconduct	The honor code is explicitly referenced in the syllabus and potential academic misconduct is addressed.
Target Audience	Graduate students in the Clinical concentration of the PhD program in Psychology.
Instructor of Record	Michael R. Nadorff
Letter of Support	Course proposal letter.pdf
Course reviewer comments	**dg300 (10/12/14 2:25 pm):** Rollback: The proposal was recently reviewed by the College of A&S curriculum committee. Specific concerns that need to be addressed, if any, have been sent to the contact person.

Key: 7070

Date Submitted: 09/23/14 12:41 pm

Viewing: BIS 6523 : Business Programming with COBOL ~~Advanced Languages II~~

Last edit: 10/29/14 2:44 pm

Changes proposed by: rap10

In Workflow

1. 0540 Head
2. 05 Curr. Committee Chair
3. 05 Dean
4. Provost
5. Banner

Approval Path

1. 09/24/14 10:00 am jjc97: Approved for 0540 Head
2. 10/29/14 2:50 pm rfo9: Approved for 05 Curr. Committee Chair
3. 10/30/14 4:54 pm ker7: Approved for 05 Dean

Catalog Pages referencing this course	Department of Management and Information Systems Management and Information Systems
Title	Business Programming with COBOL ~~Advanced Languages II~~
Proposed 30 Character Abbreviation	Business Programming w/ COBOL ~~Adv Languages II~~
Subject Prefix	BIS
Course Number	6523 Split Level with BIS 4523
Department	Management & Info Systems (0540)
College or School	College of Business (05)
Contact Person	Name: Dr. Rodney Pearson Phone: 662-325-1995 Email: rodney.pearson@msstate.edu
Date Initiated	

Effective Date	Summer 2015
Frequency	Spring
CIP Number	11.0201
Campus(es)	Campus 1, Starkville Campus 2, Meridian Campus 5, Distance
Distance Learning Course	~~Yes~~ ~~No~~
"Maymester" course	No
Core (General Education) Course	No
Split-Level Course	~~Yes~~ ~~No~~

Course Details

Credit Hours	3
Catalog Description	(Prerequisite: Graduate standing and any three hours of computer programming). Three hours lecture. ~~BIS 3523 or equivalent, or grade of B or higher in any 9 hours of computer-related coursework).Three hours lecture.Current and advanced business programming topics.~~In-depth concepts and experience in business-oriented computer programming. ~~programming in one or more current state-of-the-art languages.~~ File input/output, including sequential, indexed sequential, and relative files.

Course Modification

Itemized List and Description of Changes	This proposal is part of a four-course package that modifies and rearranges the four BIS computer programming classes. As part of that package, several changes are proposed for BIS 4523/6523: 1. The teaching medium will change from iOS programming to the COBOL programming language. COBOL has been the teaching medium in BIS 1753, but will now be used in BIS 4523/6523. 2. The prerequisite is changed to require significant prior computer programming experience, and the course content is changed accordingly.
Course Content	The content of BIS 4523/6523 will still cover advanced business programming topics and in-depth programming experience, but is no longer focused on iPhone, iPad, or iPod systems. The iOS language that is currently used as a teaching medium will be replaced with COBOL, a business transaction-oriented programming language. COBOL has been used as a teaching medium in BIS 1753; however, moving this language to BIS 4523/6523 does not mean the latter will have the same course content as BIS 1753. As described in item 2 of "Itemized List and Description of Changes," the course content of BIS 4523/6523 will be advanced.

Exam #4 20%

Attendance will be checked at the beginning of each class meeting. Attendance can either add points to, or subtract points from, the final class average. Students with three or fewer absences for the semester will get 3-n bonus percentage points added to their final average. Students with more than 3 absences will have 2^(n-4) percentage points deducted from their final average, up to a maximum of a 32 percentage point deduction.

Grading Scale (Percentage)
90-100% = A
80-89% = B
70-79% = C
60-69% = D
< 60% = F

The information systems industry is demanding greater technical skills from today's college graduates. To meet these expectations, we are proposing several updates to our graduate BIS computer programming courses offered at the Starkville and Distance campuses. Changes to BIS 6523 are designed to provide the same topics and rigor as before, though the teaching medium will change to more business-oriented transactional processing languages such as COBOL. Moving COBOL from a 1000-level course (i.e., BIS 1753) to a split-level course (i.e., BIS 4523/6523) should improve both the technical skills and employment potential of those students pursuing programming careers. Offering these opportunities through the Distance program helps ensure that Campus 5 students will be given the same employment opportunities that Campus 1 students receive.

Learning Outcomes

BIS 6523 assumes significant experience in computer programming. It could be appropriate as an advanced programming class for any major that requires computer programming. At the end of the course, students will be able to:

1. Discuss general computer programming concepts in depth.
2. Use a structured problem-solving approach to solve business problems. The student will first be able to analyze and demonstrate an understanding of a problem, and then develop a solution.
3. Write programs with proper capitalization, indentation, variable naming, and other common style elements.

Academic Misconduct

The two parts of the course that would warrant academic misconduct detection and prevention measures are homework (10% of the final grade) and exams (a total of 80%). In our BIS programming classes, students are allowed to utilize any resource in doing their homework. They may talk with other students. We try to clearly explain to them, however, that they are expected to do their own work, to write their own code. The only thing we do in any of our programming classes to detect academic misconduct on homework is to look for obvious duplication of code -- we would do the same in the online class.

Our programming exams are open-book, so we have a similar situation. We look for obvious duplication of code.

Since both the Starkville and Distance classes use computer-based testing, they use similar measures to deter academic misconduct. These measures include managing the servers on which students do their programming, monitoring server logs for any abnormal activities (e.g., during exams), and using both automated and manual comparisons of source code. Students must also sign and acknowledge the MSU Honor

Effect on Other Courses	This modification is part of a four-course package, and does move the previous contents of BIS 1753 into this class. It does not have any effect on any other courses.
Method of Instruction	Lecture
Method of Delivery	Face to face Online, Internet, Web based
Current Course Outline of Campus 1	BIS 4523-6523 Course Outline Current-3_rfo.docx
Proposed Course Outline of Campus 1	BIS 4523-6523 Course Outline Proposed-2_rfo.docx
Current Course Outline of Campus 5	BIS 4523-6523 Course Outline Current-3_rfo.docx
Proposed Course Outline of Campus 5	BIS 4523-6523 Course Outline Proposed-2_rfo.docx
Detailed Current Course Syllabus of Campus 1	2015Fall-BIS4523SyllabusOld.doc
Detailed Proposed Course Syllabus of Campus 1	BIS 4523-6523 Course Syllabus Proposed_v02_rfo.docx
Detailed Current Course Syllabus of Campus 5	2015Fall-BIS4523SyllabusOld.doc
Detailed Proposed Course Syllabus of Campus 5	BIS 4523-6523 Course Syllabus Proposed_v02_rfo.docx
Table outlining Equivalency of Campus 1 and Campus 5 Course Offerings	BIS 6523 Campus 1-5 Comparison Table v02_rfo.docx
Method of Evaluation	Assessment will consist of quizzes, homework assignments, and exams. The exams will assess understanding of key course concepts. Quizzes 10% Homework assignments 10% Exam #1 20% Exam #2 20% Exam #3 20%

	Code.
Target Audience	All MSIS students, plus any Campus 1 or 5 students who are interested in computer programming. The target audience for the Distance class will remain unchanged.
Instructor of Record	Dr. Rodney Pearson
Graduate Student Requirements	Graduate students are expected to demonstrate far better programming style (e.g., more precision and description in documentation, item naming, layout, and delimiter matching). This is especially important in COBOL programs, which are expected to be English-like and readable. We typically do not reduce undergraduate grades for poor programming style, but do for graduate students. Graduate students' programs are expected to create higher quality output reports as well (e.g., more precise formatting, more professional layout, and extended information). Given these higher expectations, graduate student assignments will be graded according to a higher set of standards than will undergraduate student assignments.
Delivery Statement	The submitted AOCE course will not violate the Provost's policies on Campus 5 offerings.
Letter of Support	UCCC-SupportLetter-6523.pdf
Effect on Other Courses	This modification will have no effect on any other course.
Course reviewer comments	**rfo9 (10/25/14 1:11 pm):** This is not a special topics course, even though this is indicated in the Leepfrog Web page. **rfo9 (10/29/14 11:17 am):** The BIS 4523 course modification proposal is contained in a separate Leepfrog submission.

Key: 1317

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education **Department:** CISE

Contact Person: Kathleen Alley **Phone:** 5-2587 **E-mail:** kalley@colled.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** **Effective Date:**

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
EDE	3233	Teaching Children's Literature at the Elementary and Mid	(3)

Current Catalog Description:

Three hours lecture. Teaching children's literature at the elementary and middle levels. Introduction, selection, presentation and utilization of a variety of children's literature.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved:		*Date:* 9/12/14
Department Head		
Chair, College or School Curriculum Committee	Rebecca Robichaux Davis	9-26-14
Dean of College or School		9/29/14
Chair, University Committee on Courses and Curricula		
Chair, Graduate Council (if applicable)		
Chair, Deans Council		

COURSE APPROVAL FOR DISTANCE LEARNING
EDE 3233 Teaching Children's Literature at the Elementary and Middle Levels

A. COURSE PROPOSAL

1. CATALOG DESCRIPTION

EDE 3233 Teaching Children's Literature at the Elementary and Middle Levels

Three hours lecture. Teaching children's literature at the elementary and middle levels. Introduction, selection, presentation and utilization of a variety of children's literature.

2. JUSTIFICATION FOR CDE OFFERING

The intended audience for this course is teacher candidates enrolled in the online elementary education degree program. The elementary education degree is targeted to teaching assistants and others who wish to become teachers in classrooms grades preK-8 but who cannot attend on campus courses due to work schedules and distance from campus. Many of our face-to-face students enroll in EDE 3233 because they want to learn more about children's literature and texts they can share with students. Distance students have expressed an interest in this elective.

3. LEARNING OUTCOMES

See syllabus for course objectives. This course is an elective offered to teacher candidates in elementary and special education, and also taken by students in the School of Human Sciences seeking child development concentrations. Learning outcomes for this course focus on providing future educators with knowledge of and experience with an array of literature for children. At the end of the course the students enrolled will better understand the characteristics of quality children's literature, the range of media for children, the characteristics of genres and more. The course is intended to engender deeper knowledge of and passion for literature written for children and help educators select and use literature in the classroom and in out-of-school settings.

4. DETAILED COURSE OUTLINE OF CAMPUS 1

See Attached Campus 1 Syllabus.

5. DETAILED COURSE OUTLINE OF CAMPUS 5

See Attached Campus 5 Syllabus. The main difference between the Campus 5 version of this course and the Campus 1 version is that all instruction is provided online through MyCourses and all assignments are submitted electronically for the Campus 5 version. Instruction will be delivered via PowerPoint presentations, video lectures, supplementary web-based lecture notes and commentary, assigned course readings, online class discussion forum interaction, and email correspondence. Specifically, the content of the courses and methods of delivery for both the Campus 1 and Campus 5 versions of the course are detailed below:

Content Area	Face-to-Face	Online, Internet, Web-based
Children's and Adolescent Literature: yesterday, Today, and Tomorrow • Value of literature • Genres of literature • Selection of literature • Book awards	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Picture Books • Defining picture books • Picture books in children's lives • The art of picture books • Evaluating picture books • Picture books for developmental stages • Making connections between life and literature • Using picture books in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Poetry and Verse • Poetry in children's lives • Criteria for evaluating poetry • Children's poetry preferences • Forms of poetry • Using poetry in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Folklore • Defining folklore • Folklore in children's lives • Types of folklore • Using folklore in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Fantasy and Science Fiction • Defining fantasy and science fiction • The role of fantasy and science fiction in children's lives • The world of fantasy • Themes in science fiction • Using fantasy and science fiction in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Contemporary Realistic fiction ▪ Defining realistic fiction ▪ The role of realistic fiction in children's lives ▪ Criteria for selecting realistic	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)

fiction ▪ Types of contemporary realistic fiction ▪ Themes in realistic fiction ▪ Using realistic fiction in the classroom		
Historical Fiction ▪ Defining historical fiction ▪ Historical fiction in children's lives ▪ Criteria for selecting historical fiction ▪ Using historical fiction in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Biography ▪ Defining Biography ▪ Biography in children's lives ▪ Criteria for selecting biography ▪ Exploring biography ▪ Using biography in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Nonfiction ▪ Defining nonfiction ▪ Nonfiction in children's lives ▪ Criteria for selection nonfiction ▪ Nonfiction across the curriculum ▪ Using nonfiction in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Building a Culturally Diverse Literature Collection ▪ Culturally diverse literature ▪ Culturally diverse literature in children's lives ▪ Criteria for selecting culturally diverse literature ▪ Literature from parallel cultures ▪ International literature ▪ Literature exploring sexual orientation ▪ Literature exploring exceptionalities ▪ Using culturally diverse literature in the classroom	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Developing Responsive Readers ▪ A transactional view of reading ▪ Helping children grow as	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion

responsive readers		board posts, online course readings)
Literature-based Instruction in Preschool and Primary Grades ▪ A literature-based curriculum ▪ Using literature with emergent and beginning readers ▪ Using literature to integrate in curriculum ▪ Assessment	6 Hours (lecture, quizzes, feedback, discussion, course readings)	6 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Literature-based Instruction in Intermediate and Middle School ▪ Reading workshop ▪ Book club ▪ Exploring themes through book club ▪ Connecting literature study and writing ▪ Using literature to transform the curriculum ▪ Assessment	6 Hours (lecture, quizzes, feedback, discussion, course readings)	6 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)

6. METHOD OF EVALUATION

Grading Scale:
465 - 500=A
430 - 464=B
395 - 429=C
360 - 394=D
359 & below=F

COURSE ASSIGNMENTS/ACTIVITIES

Active reading/participation	30 pts
Syllabus quiz	10 pts
In-Class Writing/Hands-on Activities	150 pts
Book Talks	30 pts
Poetry reading/reflection	15 pts
Art walk / reflection	15 pts
Off-campus read aloud/reflection	20 pts
Lesson Plan Project	20 pts
Literature Group Project	30 pts
Family literacy paper	60 pts
30 Book Classroom Library Database	120 pts
Total Points	**500 pts**

ACADMIC MISCONDUCT
Academic misconduct will be monitored by (1) having students sign and scan/email or fax a form indicating they have read and understand the terms of the course syllabus and MSU Honor Code; (2) time sensitive texts and exams with randomly ordered questions.

TARGET AUDIENCE
The target audience for this course is elementary education majors who are currently enrolled in the online elementary education degree program. These students have requested additional electives offered in the online format that will help deepen their knowledge of effective instructional practices.

7. **METHOD OF INSTRUCTION**
   C--Lecture

8. **METHOD OF DELIVERY**
   O – Online, Internet, Web-based
   Instruction will be delivered via PowerPoint and Video presentations, supplementary web-based lecture notes and commentary, assigned course readings, online class discussions, and email correspondence. Student participation and interaction is achieved through learning activities and performance on quizzes, discussions, and class extension activities.

9. **DELIVERY STATEMENT**
   Distance offerings of EDE 3233 will not violate the Provost's policies on Campus 5 offerings. This course is not required in the degree program and is only offered and an elective, and will continue to be offered as an elective on the Starkville and Meridian campus.

B. SPECIAL NOTES

1. **CROSS-LISTING**
   Not applicable
2. **EFFECTIVE DATE**
   Upon approval
3. **EFFECT ON OTHER COURSES**
   EDE 3233 will continue to be offered regularly on the Starkville and Meridian campuses via face-to-face delivery. It is an elective offered to teacher candidates in elementary and special education, and also taken by students in the School of Human Sciences seeking child development concentrations. The course will continue to be offered in a face-to-face format to serve those students twice per year.
4. **CONTACT PERSON**
   Dr. Kathleen Alley, 662-325-3747
5. **MASTER SCHEDULE**
   EDE 3233 will be offered online summer and spring semesters.

CAMPUS 1 SYLLABUS

COURSE PREFIX & NUMBER: EDE 3233

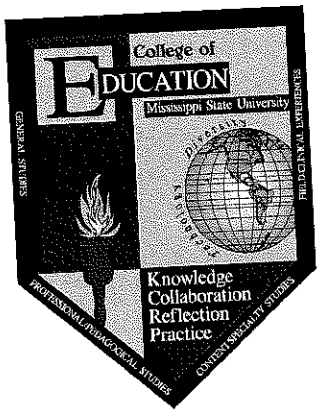
COURSE TITLE: Teaching Children's Literature at the Elementary and Middle Levels – Campus 1

CREDIT HOURS: 3 Semester Hours

TYPE OF COURSE: Lecture

CATALOGUE DESCRIPTION: Three hours lecture. Teaching children's literature at the elementary and middle levels. Introduction, selection, presentation and utilization of a variety of children's literature.

COLLEGE OF EDUCATION CONCEPTUAL FRAMEWORK:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

COURSE OBJECTIVES:

1. To help teacher candidates develop an understanding of the literature that meets the needs and interests of children from pre-school to middle school levels. [INTASC 1; CFPO 2]
2. To help teacher candidates evaluate and read a variety of books across the genres for pre-school to middle school children that meet curriculum and recreational needs. [INTASC 1; CFPO 1, 2, 3]
3. To help teacher candidates identify the importance of multicultural groups/ representation in literature and reading materials. [INTASC 3; CFPO 2, 3, 6]
4. To help teacher candidates become aware of the history of children's literature. [INTASC 7; CFPO 1, 3, 6]
5. To help teacher candidates develop skills in the critical evaluation of books. [INTASC 7; CFPO 1, 4]
6. To help teacher candidates become aware of the recent trends in children's literature. [INTASC 7; CFPO 1, 3]
7. To help teacher candidates recognize the value of helping young children develop lifelong reading habits. [INTASC 5; CFPO 1, 6, 8]

TOPICS TO BE COVERED:

Instruction and Assessment of the Content Standards related to introduction, selection, presentation and utilization of children's literature, and technology appropriate for each of the following:

- Children's and Adolescent Literature: Yesterday, Today, and Tomorrow (3 hrs.)
    1. The value of literature
    2. The genres of literature
    3. Selection of literature
    4. Book awards
- Picture Books (3 hrs.)
    1. Defining picture books
    2. Picture books in children's lives
    3. The art of picture books
    4. Evaluating picture books
    5. Picture books for developmental stages
    6. Making connections between life and literature
    7. Using picture books in the classroom
- Poetry and Verse (3 hrs.)
    1. Poetry in children's lives
    2. Criteria for evaluating poetry
    3. Children's poetry preferences
    4. Forms of poetry
    5. Using poetry in the classroom
- Folklore (3 hrs.)
    1. Defining folklore
    2. Folklore in children's lives
    3. Types of folklore
    4. Using folklore in the classroom
- Fantasy and Science Fiction (3 hrs.)

1. Defining fantasy and science fiction
2. The role of fantasy and science fiction in children's lives
3. The world of fantasy
4. Themes in science fiction
5. Using fantasy and science fiction in the classroom

- Contemporary Realistic fiction (3 hrs.)
  1. Defining realistic fiction
  2. The role of realistic fiction in children's lives
  3. Criteria for selecting realistic fiction
  4. Types of contemporary realistic fiction
  5. Themes in realistic fiction
  6. Using realistic fiction in the classroom
- Historical fiction (3 hrs.)
  1. Defining historical fiction
  2. Historical fiction in children's lives
  3. Criteria for selecting historical fiction
  4. Using historical fiction in the classroom
- Biography (3 hrs.)
  1. Defining biography
  2. Biography in children's lives
  3. Criteria for selection biography
  4. Exploring biography
  5. Using biography in the classroom
- Nonfiction (3 hrs.)
  1. Defining nonfiction
  2. Nonfiction in children's lives
  3. Criteria for selection nonfiction
  4. Nonfiction across the curriculum
  5. Using nonfiction in the classroom
- Building a Culturally Diverse Literature Collection (3 hrs.)
  1. Culturally diverse literature
  2. Culturally diverse literature in children's lives
  3. Criteria for selecting culturally diverse literature
  4. Literature from parallel cultures
  5. International literature
  6. Literature exploring sexual orientation
  7. Literature exploring exceptionalities
  8. Using culturally diverse literature in the classroom
- Developing Responsive Readers (3 hrs.)
  1. A transactional view of reading
  2. Helping children grow as responsive readers
- Literature-Based Instruction in Preschool and Primary Grades (6 hrs.)
  1. A literature-based curriculum
  2. Using literature with emergent and beginning readers
  3. Using literature to integrate in curriculum
  4. Assessment

- Literature-Based Instruction in Intermediate and Middle School (6 hrs.)
    1. Reading workshop
    2. Book club
    3. Exploring themes through book club
    4. Connecting literature study and writing
    5. Using literature to transform the curriculum
    6. Assessment

REQUIRED TEXTS AND MATERIALS:

- Short, K., Lynch-Brown, C., & Tomlinson, M. (2013). *Essentials of children's literature* (8th Edition, MyEducationKit series). Pearson. (ISBN – 978-0133066739)
- Fox, M. (2001). *Reading magic: Why reading aloud to our children will change their lives forever*. Orlando, FL: Harcourt.
- Readings/articles: Download from myCourses
- A variety of children's literature books

RECOMMENDED TEXTS:

- Tompkins, G. E. (2004). *50 literacy strategies: Step by step* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall.

METHODS OF INSTRUCTION:

Methods of instruction will include large group discussions (utilizing multi-media approaches, invited speakers, shared problem solving), small group assignments, and individual student assignments. Instruction and assignments will be both in class/Face-to-Face and through myCourses platform with MSU access. Active involvement by the student with myCourses will be required in order to access many course documents, complete discussions with the instructor/peers, and access/submit assignments.

SUGGESTED STUDENT ACTIVITIES:

- **Active Reading and Participation (30 pts.):** Actively read all articles and chapters ahead of class (see directions for how to do this) and willingly and actively participate in group work, whole class discussions, etc. In addition to the assigned text and articles, each student will read a minimum of 30 children's books during the semester. **Merchandise books—created to enhance the sales of products and often contain movie, television, or cartoon characters—generally are not appropriate for this course.** Students will be expected to bring several books to class each week to share and for other activities. (All Course Objectives)

- **Syllabus Quiz (10 pts.):** The quiz will be available on Blackboard after the first class and will be due before the beginning of the second week. (All Course Objectives)

- **In-Class Writing/Hands-on Activities (15 @ 10 pts. each = 150 pts.):** Most weeks we will have one or more in-class writing or hands-on activities, some of which may require your bringing supplies to class. NOTE: Although most of these activities will be

completed during the time allotted in class, some may need to be finished at home and turned in the following class. (All Course Objectives)

- **Book Talk (2 @ 15 pts. each = 30 pts.):** One book talk will be done as a group; one book talk will be done individually. Students will sign up to do the individual book talk on a particular week. (Course Objectives: 1, 2, 5, 6)

- **Poetry Reading & Reflection (15 pts.):** Each student will present a poem and a visual illustration of the poem (any media) to the class then will complete a reflection on Blackboard. (Course Objectives: 1, 2)

- **Art Walk & Reflection (15 pts.):** Each student will lead the class on an Art Walk through a picture book or illustrated book. Afterward, the student will complete a reflection on Blackboard. (Course Objectives: 1, 2)

- **Off-Campus Read Aloud & Reflection (20 pts.):** Each student will be responsible for an off-campus read aloud in front of a group of children in a supervised setting. Afterward, the student will complete a reflection on Blackboard. (Course Objectives: 1, 2, 7)

- **Lesson Plan Project /Career Path Project (20 pts.):** Each student will create a lesson plan that reflects the student's understanding of children's literature and how to incorporate various works into the classroom, or create a text set that reflects the student's understanding of children's literature and how to incorporate various works into the workplace setting involving children. (Course Objectives: 1, 2, 3, 5, 6, 7)

- **Literature Group Project (30 pts.):** Choose ONE of the two projects listed below. More detailed information, including an evaluative rubric, will be given; but each group will create a multimedia presentation about one of the following: (Course Objectives: 1, 2, 3, 5)
    - **Diversity in Children's Literature Study:** Choose a diverse culture to study through a representative sampling of children's literature. Choose from the following groups of people: a) African Americans, b) Hispanic Americans, c) Asian Americans, d) Native Americans, e) Older generations, f) Physically or mentally challenged people, g) Non-traditional families, h) Different religions
    - **Genre or Grade-Level Study:** Choose a genre or a grade-level to study through a representative sampling of children's literature.

- **Family Literacy Paper (60 pts.):** This paper will be a research paper focusing on relevant aspects of why it is important for family members to read with and to children. (Course Objectives: 1, 6, 7)

- **Author/Illustrator Study:** Choose an author (prose or poetry) or an illustrator to research. Write a one page synopsis of his/her work and a list of children's books that might be a good representation of that work. (Course Objectives: 2, 6)

- **30-Book Classroom Library Database (120 pts.):** In order to learn how to document and keep track of a classroom library collection, each student will review and respond to at least 30 books online by creating your own virtual library at librarything.com. More details will be provided in class. (All Course Objectives)

ACADEMIC INTEGRITY: HONOR CODE:
Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information visit: http://students.msstate.edu/honorcode

Please note that **Plagiarism** is defined and clarified within the honor code as follows:

Plagiarism:
The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

Clarification:

a. Intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper credit).
b. Failing to credit sources used in a work product in an attempt to pass off the work as one's own.
c. Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources.
d. The internet, data bases and other electronic resources must be cited if they are utilized in any way as resource material in an academic exercise.

General information pertaining to plagiarism:

a. Faculty members are responsible for identifying any specific style/format requirement for the course. Examples include, but are not limited to, American Psychological Association (APA) style and Modern Languages Association (MLA) style.

b. Direct Quotation: Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged in the text by citation or in a footnote or endnote.
c. Paraphrase: Prompt acknowledgment is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment,..." and then conclude with a footnote or endnote identifying the exact reference.
d. Borrowed facts: Information gained in reading or research, which is not common knowledge, must be acknowledged.
e. Common knowledge: Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials, which add only to a general understanding of the subject, may be acknowledged in the bibliography and need not be footnoted or endnoted.
f. Footnotes, endnotes, and in-text citations: One footnote, endnote, or in-text citation is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgment made. Similarly, when a passage is paraphrased, acknowledgment is required.

TECHNOLOGY:
Technology failures (i.e. a frozen hard drive, an erased disk, an out-of-ink printer, a lost flash drive, etc.) are not valid excuses for late or missing assignments. It is your responsibility to create multiple back-up copies of all written assignments, to keep your printer operational, and to leave enough time to respond to problems. Remember: late assignments will not be accepted. Back up your work.

DIVERSITY:
Diversity is addressed through the variety of book choices and readings in class. Student will examine this material for appropriateness to use with diverse learners.

DISABILITY:
All necessary accommodations will be made for any documented disability. Contact disability services at 325-3335 or visit the Student Support Services website or office for more information.

EVALUATION OF STUDENT PROGRESS:
Written assignments must follow the Formatting Guide, APA style for citing sources, and must be carefully edited using Standard English Grammar. If they are not, you will lose 5% and be required to complete the Conventions Explanation Document. In order for you to receive the feedback that you need and to demonstrate a level of professionalism appropriate for beginning teachers, you must turn in assignments on time. Late papers will not be accepted. If you are absent the day something is due, email it to me. Papers will not be accepted in class after the due date unless other arrangements have been made due to extenuating circumstances. Grades will be determined based primarily on the criteria established in the General Grading Rubric and individual rubrics and criteria for each assignment. In general, a B represents very strong,

thorough, complete work of the sort that's likely to get you hired by a school principal. An A represents the quality of work I'd expect from teachers I'd want for my very own children. A C represents solid work of an "average" teacher. Below a C is not a passing grade.

Grading Scale:
465 - 500=A
430 - 464=B
395 - 429=C
360 - 394=D
359 & below=F

COURSE ASSIGNMENTS/ACTIVITIES

Active reading/participation	30 pts
Syllabus quiz	10 pts
In-Class Writing/Hands-on Activities	150 pts
Book Talks	30 pts
Poetry reading/reflection	15 pts
Art walk / reflection	15 pts
Off-campus read aloud/reflection	20 pts
Lesson Plan Project	20 pts
Literature Group Project	30 pts
Family literacy paper	60 pts
30 Book Classroom Library Database	120 pts
Total Points	**500 pts**

BIBLIOGRAPHY:

Bishop, R.S. (Ed.). (1994). *Kaleidoscope: A multicultural booklist for grades K-8.* Urbana, IL: National Council of Teachers of English.

Bryan, J. (1998). K-W-W-L: Questioning the unknown. *The Reading Teacher, 51*, 618-621.

Duke, N. (2004). The case for informational texts. *Educational Leadership, 61*(6), 40-44.

Gambrell, L.B. (1996). Creating classroom cultures that foster reading motivation. *The Reading Teacher, 50,* 14-25.

Guliaume, A.M. (1998). Learning with text in the primary grades. *The Reading Teacher, 51*, 476-485.

Harris, V.J. (Ed.). (1993). *Teaching multicultural literature in grades K-8.* Norwood, MA: Christopher-Gordon.

Honig, B. (1997). Research-based reading instruction: the right way. *Education Digest, 63*, 15-20.

Hickman, J. & Cullinan, B.E. (Eds.). (1989). *Children's literature in the classroom: Weaving Charlotte's web.* Needham Heights, MA: Christopher-Gordon.

Johnston, F. (1998). The reader, the text, and the task: learning words in first grade. *The Reading Teacher, 51*, 666-675.

Kolb, G. (1996) . Read with a beat: Developing literacy through music and song. *The Reading Teacher, 50*, 89-92.

Koskinen, P. (1995). Peers as reading tutors: Guidelines for successful practices. *The Reading Teacher, 51,* 562-569.

Leland, C., Harste, J., & Huber, K. (2005). Out of the box: Critical literacy in a first-grade classroom. *Language Arts, 82*(4), 257.

Meece, J.L., & Miller, S.D. (1997). Enhancing elementary students' motivation to read and write: A classroom intervention study. *The Journal of Educational Research, 90,* 286-299.

Miller, H.M. (1997). Teaching and learning about cultural diversity -breaking the silence. *The Reading Teacher, 51*, 260-262.

Miller, D. (2009). The Book Whisperer: Awakening the Inner Reader in Every Child. San Francisco: SA: Jossey Bass.

CAMPUS 5 SYLLABUS

COURSE PREFIX & NUMBER: EDE 3233

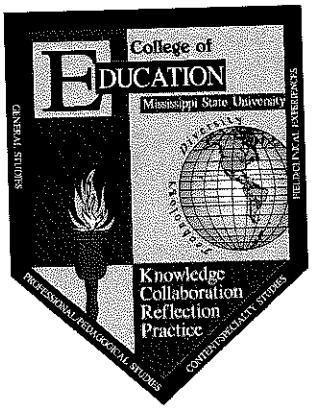
COURSE TITLE: Teaching Children's Literature at the Elementary and Middle Levels – Campus 5

CREDIT HOURS: 3 Semester Hours

TYPE OF COURSE: Lecture

CATALOGUE DESCRIPTION: Three hours lecture. Teaching children's literature at the elementary and middle levels. Introduction, selection, presentation and utilization of a variety of children's literature.

COLLEGE OF EDUCATION CONCEPTUAL FRAMEWORK:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

COURSE OBJECTIVES:

1. To help teacher candidates develop an understanding of the literature that meets the needs and interests of children from pre-school to middle school levels. [INTASC 1; CFPO 2]
2. To help teacher candidates evaluate and read a variety of books across the genres for pre- school to middle school children that meet curriculum and recreational needs. [INTASC 1; CFPO 1, 2, 3]
3. To help teacher candidates identify the importance of multicultural groups/ representation in literature and reading materials. [INTASC 3; CFPO 2, 3, 6]
4. To help teacher candidates become aware of the history of children's literature. [INTASC 7; CFPO 1, 3, 6]
5. To help teacher candidates develop skills in the critical evaluation of books. [INTASC 7; CFPO 1, 4]
6. To help teacher candidates become aware of the recent trends in children's literature. [INTASC 7; CFPO 1, 3]
7. To help teacher candidates recognize the value of helping young children develop lifelong reading habits. [INTASC 5; CFPO 1, 6, 8]

TOPICS TO BE COVERED:

Instruction and Assessment of the Content Standards related to introduction, selection, presentation and utilization of children's literature, and technology appropriate for each of the following:

- Children's and Adolescent Literature: Yesterday, Today, and Tomorrow (3 hrs.)
    5. The value of literature
    6. The genres of literature
    7. Selection of literature
    8. Book awards
- Picture Books (3 hrs.)
    8. Defining picture books
    9. Picture books in children's lives
    10. The art of picture books
    11. Evaluating picture books
    12. Picture books for developmental stages
    13. Making connections between life and literature
    14. Using picture books in the classroom
- Poetry and Verse (3 hrs.)
    6. Poetry in children's lives
    7. Criteria for evaluating poetry
    8. Children's poetry preferences
    9. Forms of poetry
    10. Using poetry in the classroom
- Folklore (3 hrs.)
    5. Defining folklore
    6. Folklore in children's lives
    7. Types of folklore
    8. Using folklore in the classroom

- Fantasy and Science Fiction (3 hrs.)
    6. Defining fantasy and science fiction
    7. The role of fantasy and science fiction in children's lives
    8. The world of fantasy
    9. Themes in science fiction
    10. Using fantasy and science fiction in the classroom
- Contemporary Realistic fiction (3 hrs.)
    7. Defining realistic fiction
    8. The role of realistic fiction in children's lives
    9. Criteria for selecting realistic fiction
    10. Types of contemporary realistic fiction
    11. Themes in realistic fiction
    12. Using realistic fiction in the classroom
- Historical fiction (3 hrs.)
    5. Defining historical fiction
    6. Historical fiction in children's lives
    7. Criteria for selecting historical fiction
    8. Using historical fiction in the classroom
- Biography (3 hrs.)
    6. Defining biography
    7. Biography in children's lives
    8. Criteria for selection biography
    9. Exploring biography
    10. Using biography in the classroom
- Nonfiction (3 hrs.)
    6. Defining nonfiction
    7. Nonfiction in children's lives
    8. Criteria for selection nonfiction
    9. Nonfiction across the curriculum
    10. Using nonfiction in the classroom
- Building a Culturally Diverse Literature Collection (3 hrs.)
    9. Culturally diverse literature
    10. Culturally diverse literature in children's lives
    11. Criteria for selecting culturally diverse literature
    12. Literature from parallel cultures
    13. International literature
    14. Literature exploring sexual orientation
    15. Literature exploring exceptionalities
    16. Using culturally diverse literature in the classroom
- Developing Responsive Readers (3 hrs.)
    3. A transactional view of reading
    4. Helping children grow as responsive readers
- Literature-Based Instruction in Preschool and Primary Grades (6 hrs.)
    5. A literature-based curriculum
    6. Using literature with emergent and beginning readers
    7. Using literature to integrate in curriculum

8. Assessment

- Literature-Based Instruction in Intermediate and Middle School (6 hrs.)
  7. Reading workshop
  8. Book club
  9. Exploring themes through book club
  10. Connecting literature study and writing
  11. Using literature to transform the curriculum
  12. Assessment

REQUIRED TEXTS AND MATERIALS:

- Short, K., Lynch-Brown, C., & Tomlinson, M. (2013). *Essentials of children's literature* (8th Edition, MyEducationKit series). Pearson. (ISBN – 978-0133066739)
- Fox, M. (2001). *Reading magic: Why reading aloud to our children will change their lives forever*. Orlando, FL: Harcourt.
- Readings/articles: Download from myCourses
- A variety of children's literature books

RECOMMENDED TEXTS:

- Tompkins, G. E. (2004). *50 literacy strategies: Step by step* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall.

METHODS OF INSTRUCTION:

Technology will be used in both the delivery of course content and through course requirements completed by students. Methods of instruction will include large and small group discussions (utilizing multi-media approaches, shared problem solving, and invited speakers in virtual classroom spaces), lecture, videotapes, discussion posts, student presentations, field experiences, and use of Internet resources with both small group assignments and individual student assignments. Instruction and assignments will be delivered through the MyCourses platform. Active involvement by the student with MyCourses will be required in order to access course documents, complete discussions with instructor/peers, and access/submit assignments.

SUGGESTED STUDENT ACTIVITIES:

- **Active Reading and Participation (30 pts.):** Actively read all articles and chapters ahead of class (see directions for how to do this) and willingly and actively participate in group work, discussion post, etc. In addition to the assigned text and articles, each student will read a minimum of 30 children's books during the semester. **Merchandise books—created to enhance the sales of products and often contain movie, television, or cartoon characters—generally are not appropriate for this course.** (All Course Objectives)

- **Syllabus Quiz (10 pts.):** The quiz will be available on Blackboard after the first class and will be due before the beginning of the second week. (All Course Objectives)

- **In-Class Writing/Hands-on Activities (15 @ 10 pts. each = 150 pts.):** Most weeks we will have one or more writing or hands-on activities, some of which may require you completing a project or posting pictures on the discussion board. (All Course Objectives)

- **Book Talk (2 @ 15 pts. each = 30 pts.):** Students will post information on the class discussion board, including a recording of their book talks. (Course Objectives: 1, 2, 5, 6)

- **Poetry Reading & Reflection (15 pts.):** Each student will present a poem and a visual illustration of the poem to the class, and then will complete a reflection on Blackboard (any media for both presentation of the poem and illustration of the poem). (Course Objectives: 1, 2)

- **Art Walk & Reflection (15 pts.):** Each student will develop a power point presentation that will lead the class on an Art Walk through a picture book or illustrated book. The student will complete a reflection on Blackboard. (Course Objectives: 1, 2)

- **Off-Campus Read Aloud & Reflection (20 pts.):** Each student will be responsible for an off-campus read aloud in front of a group of children in a supervised setting. Afterward, the student will complete a reflection on Blackboard. (Course Objectives: 1, 2, 7)

- **Lesson Plan Project /Career Path Project (20 pts.):** Each student will create a lesson plan that reflects the student's understanding of children's literature and how to incorporate various works into the classroom, or create a text set that reflects the student's understanding of children's literature and how to incorporate various works into the workplace setting involving children. (Course Objectives: 1, 2, 3, 5, 6, 7)

- **Literature Group Project (30 pts.):** Choose ONE of the two projects listed below. More detailed information, including an evaluative rubric, will be given; but each group will create a multimedia presentation shared online with classmates via Blackboard about one of the following: (Course Objectives: 1, 2, 3, 5)
    - **Diversity in Children's Literature Study:** Choose a diverse culture to study through a representative sampling of children's literature. Choose from the following groups of people: a) African Americans, b) Hispanic Americans, c) Asian Americans, d) Native Americans, e) Older generations, f) Physically or mentally challenged people, g) Non-traditional families, h) Different religions
    - **Genre or Grade-Level Study:** Choose a genre or a grade-level to study through a representative sampling of children's literature.

- **Family Literacy Paper (60 pts.):** This paper will be a research paper focusing on relevant aspects of why it is important for family members to read with and to children.

(Course Objectives: 1, 6, 7)

- **Author/Illustrator Study:** Choose an author (prose or poetry) or an illustrator to research. Write a one page synopsis of his/her work and a list of children's books that might be a good representation of that work. (Course Objectives: 2, 6)

- **30-Book Classroom Library Database (120 pts.):** In order to learn how to document and keep track of a classroom library collection, each student will review and respond to at least 30 books online by creating your own virtual library at librarything.com. More details will be provided in class. (All Course Objectives)

ACADEMIC INTEGRITY: HONOR CODE:
Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information visit: http://students.msstate.edu/honorcode

Please note that **Plagiarism** is defined and clarified within the honor code as follows:

Plagiarism:
The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

Clarification:

a. Intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper credit).
b. Failing to credit sources used in a work product in an attempt to pass off the work as one's own.
c. Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources.
d. The internet, data bases and other electronic resources must be cited if they are utilized in any way as resource material in an academic exercise.

General information pertaining to plagiarism:

a. Faculty members are responsible for identifying any specific style/format requirement for the course. Examples include, but are not limited to, American Psychological Association (APA) style and Modern Languages Association (MLA) style.
b. Direct Quotation: Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged in the text by citation or in a footnote or endnote.
c. Paraphrase: Prompt acknowledgment is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment,..." and then conclude with a footnote or endnote identifying the exact reference.
d. Borrowed facts: Information gained in reading or research, which is not common knowledge, must be acknowledged.
e. Common knowledge: Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials, which add only to a general understanding of the subject, may be acknowledged in the bibliography and need not be footnoted or endnoted.
f. Footnotes, endnotes, and in-text citations: One footnote, endnote, or in-text citation is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgment made. Similarly, when a passage is paraphrased, acknowledgment is required.

TECHNOLOGY:
Technology will be used in both the delivery of course content and through course requirements completed by students. Delivery of course content will use PowerPoint and video lecture presentations, materials on the Internet and MyCourses. All course assignments will be completed using appropriate software.

Technology failures (i.e. a frozen hard drive, an erased disk, an out-of-ink printer, a lost flash drive, etc.) are not valid excuses for late or missing assignments. It is your responsibility to create multiple back-up copies of all written assignments, to keep your printer operational, and to leave enough time to respond to problems. Remember: late assignments will not be accepted. Back up your work.

DIVERSITY:
Diversity is addressed through the variety of book choices and readings in class. Student will examine this material for appropriateness to use with diverse learners.

DISABILITY:
All necessary accommodations will be made for any documented disability. Contact disability services at 325-3335 or visit the Student Support Services website or office for more information.

EVALUATION OF STUDENT PROGRESS:
Written assignments must follow the Formatting Guide, APA style for citing sources, and must be carefully edited using Standard English Grammar. If they are not, you will lose 5% and be required to complete the Conventions Explanation Document. In order for you to receive the feedback that you need and to demonstrate a level of professionalism appropriate for beginning teachers, you must turn in assignments on time. Late papers will not be accepted. If you are absent the day something is due, email it to me. Papers will not be accepted in class after the due date unless other arrangements have been made due to extenuating circumstances. Grades will be determined based primarily on the criteria established in the General Grading Rubric and individual rubrics and criteria for each assignment. In general, a B represents very strong, thorough, complete work of the sort that's likely to get you hired by a school principal. An A represents the quality of work I'd expect from teachers I'd want for my very own children. A C represents solid work of an "average" teacher. Below a C is not a passing grade.

Grading Scale:
465 - 500=A
430 - 464=B
395 - 429=C
360 - 394=D
359 & below=F

COURSE ASSIGNMENTS/ACTIVITIES

Active reading/participation	30 pts
Syllabus quiz	10 pts
In-Class Writing/Hands-on Activities	150 pts
Book Talks	30 pts
Poetry reading/reflection	15 pts
Art walk / reflection	15 pts
Off-campus read aloud/reflection	20 pts
Lesson Plan Project	20 pts
Literature Group Project	30 pts
Family literacy paper	60 pts
30 Book Classroom Library Database	120 pts
Total Points	**500 pts**

BIBLIOGRAPHY:

Bishop, R.S. (Ed.). (1994). *Kaleidoscope: A multicultural booklist for grades K-8.* Urbana, IL: National Council of Teachers of English.

Bryan, J. (1998). K-W-W-L: Questioning the unknown. *The Reading Teacher, 51*, 618-621.

Duke, N. (2004). The case for informational texts. *Educational Leadership, 61*(6), 40-44.

Gambrell, L.B. (1996). Creating classroom cultures that foster reading motivation. *The Reading Teacher, 50,* 14-25.

Guliaume, A.M. (1998). Learning with text in the primary grades. *The Reading Teacher, 51,* 476-485.

Harris, V.J. (Ed.). (1993). *Teaching multicultural literature in grades K-8.* Norwood, MA: Christopher-Gordon.

Honig, B. (1997). Research-based reading instruction: the right way. *Education Digest, 63*, 15-20.

Hickman, J. & Cullinan, B.E. (Eds.). (1989). *Children's literature in the classroom: Weaving Charlotte's web.* Needham Heights, MA: Christopher-Gordon.

Johnston, F. (1998). The reader, the text, and the task: learning words in first grade. *The Reading Teacher, 51*, 666-675.

Kolb, G. (1996) . Read with a beat: Developing literacy through music and song. *The Reading Teacher, 50*, 89-92.

Koskinen, P. (1995). Peers as reading tutors: Guidelines for successful practices. *The Reading Teacher, 51,* 562-569.

Leland, C., Harste, J., & Huber, K. (2005). Out of the box: Critical literacy in a first-grade classroom. *Language Arts, 82*(4), 257.

Meece, J.L., & Miller, S.D. (1997). Enhancing elementary students' motivation to read and write: A classroom intervention study. *The Journal of Educational Research, 90,* 286-299.

Miller, H.M. (1997). Teaching and learning about cultural diversity -breaking the silence. *The Reading Teacher, 51*, 260-262.

Miller, D. (2009). The Book Whisperer: Awakening the Inner Reader in Every Child. San Francisco: SA: Jossey Bass.

MISSISSIPPI STATE UNIVERSITY

Department of Curriculum, Instruction, and Special Education

Box 9705 • 310 Allen Hall • Mississippi State, MS 39762

Voice: (662)325-3747 Fax: (662)325-7857

To: Box Council and UCCC Committee Members

From: Elementary Education Faculty

RE: Support for proposals to offer EDE 3233 and EDE 3343 as online courses

Date: September 9, 2014

This letter of support is offered by elementary education faculty in Curriculum, Instruction, and Special Education for the proposals to offer EDE 3233 Teaching Children's Literature at the Elementary and Middle Levels and EDE 3343 Teaching Adolescent Literature as distance courses.

Elementary Education Faculty include: Kathleen Alley, Kenneth Anthony, Stephanie Bennett, Kristin Javorsky, Nicole Miller, Margaret Pope, and Rebecca Robichaux-Davis.

Thank you,

Elementary Education Faculty	Date
Margaret Pope	9-11-14
Kristin Javorsky	9-11-14
Kathleen Alley	9-11-14
[illegible]	9-11-14
Rebecca Robichaux-Davis	9-12-14
Kenneth Anthony	9-12-14

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education **Department:** CISE

Contact Person: Kathleen Alley **Phone:** 5-2587 **E-mail:** kalley@colled.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** **Effective Date:**

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
EDE	3343	Teaching Adolescent Literature	(3)

Current Catalog Description:

Three hours lecture. A study of the types of literature read by older children and adolescents with emphasis upon the criteria for the choice of good books and knowledge of available books and teaching materials.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved:		*Date:* 9/12/14
Department Head		
Rebecca Robichaux-Davis		9-26-14
Chair, College or School Curriculum Committee		
K. Blackburn		9/29/14
Dean of College or School		
Chair, University Committee on Courses and Curricula		
Chair, Graduate Council (if applicable)		
Chair, Deans Council		

COURSE APPROVAL FOR DISTANCE LEARNING
EDE 3343 Teaching Adolescent Literature

A. COURSE PROPOSAL

1. CATALOG DESCRIPTION

EDE 3343 Teaching Adolescent Literature

Three hours lecture. A study of the types of literature read by older children and adolescents with emphasis upon the criteria for the choice of good books and knowledge of available books and teaching materials.

2. JUSTIFICATION FOR CDE OFFERING

EDE 3343 is required for all English Education majors, and is an elective that elementary education majors can use to complete degree requirements and to broaden their knowledge of literature written for middle grades and high school students. The intended audience for online sections of this course is teacher candidates enrolled in the online elementary education degree program. The elementary education degree is targeted to teaching assistants and others who wish to become teachers in classrooms grades preK-8 but who cannot attend on-campus courses due to work schedules and distance from campus. Many of our face-to-face students enroll in EDE 3343 because they want to learn more about children's literature and texts they can share with students. Distance students have expressed an interest in this elective.

3. LEARNING OUTCOMES

See syllabus for course objectives. This course is intended to help elementary and secondary degree program majors to study the types of literature read by older children and adolescents, and to learn criteria for choosing exemplar texts in building classroom libraries and locating teaching materials aligned with literature selections.

4. DETAILED COURSE OUTLINE OF CAMPUS 1

See Attached Campus 1 Syllabus

5. DETAILED COURSE OUTLINE OF CAMPUS 5

See Attached Campus 5 Syllabus. The main difference between the Campus 5 version of this course and the Campus 1 version is that all instruction is provided online through MyCourses and all assignments are submitted electronically for the Campus 5 version. Instruction will be delivered via PowerPoint presentations, video lectures, supplementary web-based lecture notes and commentary, assigned course readings, online class discussion forum interaction, and email correspondence. Specifically, the content of the courses and methods of delivery for both the Campus 1 and Campus 5 versions of the course are detailed below:

Content Area	Face-to-Face	Online, Internet, Web-based
Understanding adolescents and their literature. • Trend in books for	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion

adolescents • Adolescents in our changing society		board posts, online course readings)
Selection of materials for adolescents. • Principles of selection • General criteria • Selection aids • Selection to meet diverse needs of the learner	12 Hours (lecture, quizzes, feedback, discussion, course readings)	12 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
A rationale for using young adult literature in the secondary school classroom. • The stages of reading development • The reading needs of the adolescent • The teacher's role • Discovering and utilizing the interests of teenagers in the book selection process • Building bridges • The young adult book as a motivational tool	6 Hours (lecture, quizzes, feedback, discussion, course readings)	6 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Literature for young adults. • What is young adult literature? • Type of young adult literature	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Methodology for incorporating young adult literature into the secondary school classroom. • The thematic unit • The Language Arts classroom and the young adult book • The Social Studies classroom and the	6 Hours (lecture, quizzes, feedback, discussion, course readings)	6 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)

young adult book • The young adult book across the curriculum		
Experiencing and sharing young adult books. • How to experience books • Sharing books • How to meet the needs of the young adult reader	12 Hours (lecture, quizzes, feedback, discussion, course readings)	12 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Censorship and the young adult book.	3 Hours (lecture, quizzes, feedback, discussion, course readings)	3 Hours (PowerPoint and video lectures, quizzes, email feedback, discussion board posts, online course readings)
Total	**45 contact hours**	**45 contact hours**

6. METHOD OF EVALUATION

Grading Scale:

A = 93 – 100%
B = 84 – 92%
C = 76 – 83%
D = 75 – 69%
F = < 69%

COURSE ASSIGNMENTS/ACTIVITIES:

Reader Sketch	5%
Interview with a YA reader	5%
Book Talk	10%
Literary Analysis Paper	15%
Book Sheets	20%
Book Activity Sets	10%
Class Discussion Activities	15%
Performance on quizzes and exam	20%

ACADMIC MISCONDUCT

Academic misconduct will be monitored by (1) having students sign and scan/email or fax a form indicating they have read and understand the terms of the course syllabus and MSU Honor Code; (2) time sensitive texts and exams with randomly ordered questions.

TARGET AUDIENCE
The target audience for this course is elementary education majors who are currently enrolled in the online elementary education degree program. These students have requested additional electives offered in the online format that will help deepen their knowledge of effective instructional practices.

7. METHOD OF INSTRUCTION
C – Lecture

8. METHOD OF DELIVERY
O = Online, Internet, Web-based
Instruction will be delivered via PowerPoint and Video presentations, supplementary web-based lecture notes and commentary, assigned course readings, online class discussions, and email correspondence. Student participation and interaction is achieved through a paper sharing information gleaned from an interview with a young adult reader, a literary analysis paper, a log of books read, the creation of a book activity set including learning activities and lesson plans, and performance on quizzes, discussions, and class extension activities.

9. DELIVERY STATEMENT
This CDE course will not violate the Provost's policies on Campus 5 offerings. This course is available to Campus 5 students, in an online, Internet, web-based format, which provides extra value to those enrolling in this format of the course since they can complete the course requirements from their homes. The Campus 5 version of this course will not replace the Campus 1 version.

B. SPECIAL NOTES

1. **CROSS-LISTING**
   Not applicable
2. **EFFECTIVE DATE**
   Upon approval
3. **EFFECT ON OTHER COURES**
   EDE 3343 will continue to be offered regularly on the Starkville and Meridian campuses via face-to-face delivery. It is required for the English Education degree program and a popular elective for Elementary Education students. The course will continue to be offered in a face-to-face format to serve those students twice per year.
4. **CONTACT PERSON**
   Dr. Kathleen Alley, 662-325-3747
5. **MASTER SCHEDULE**
   It is anticipated that EDE 3433 will be offered online in the summer of 2015.

CAMPUS 1 SYLLABUS

COURSE PREFIX & NUMBER: EDE 3343

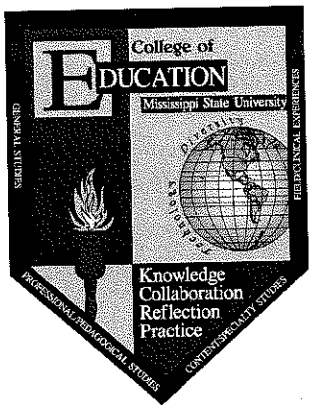
COURSE TITLE: Teaching Adolescent Literature – Campus 1

CREDIT HOURS: Three (3) Semester Hours

TYPE OF COURSE: Three Hours Lecture

CATALOGUE DESCRIPTION: Three hours lecture. A study of the types of literature read by older children and adolescents with emphasis upon the criteria for the choice of good books and knowledge of available books and teaching materials.

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

COURSE OBJECTIVES:

1. To help teacher candidates develop an understanding and appreciation of the literature that meets the needs and interest of adolescents and young people. [INTASC #12, 3; CFPO 1-12]

2. To help teacher candidates examine and read a variety of books for adolescents and young people that meet curriculum and recreational needs. [INTASC #1, 7; CFPO 1, 2, 6, 10, 12]
3. To help teacher candidates develop competencies in using selection aids for books and other media. [INTASC #1; CFPO 1, 7, 12]
4. To help teacher candidate develop skills in presenting book talks, discussions, and compiling bibliographies. [INTASC #1, 3; CFPO 1-12]
5. To help teacher candidates identify the need for cultural diversity in young adult literature. [INTASC #1, 2, 3; CFPO 1-12]
6. To help teacher candidates develop an understanding of the utilization of effective book and non-book materials in the classroom. [INTASC #1; CFPO 1, 2, 3. 7, 12]
7. To help teacher candidates recognize the values of effective book and non-book material in the school program and in life. [INTASC #1; CFPO 1, 2, 3, 7, 12]
8. To help teacher candidates identify the diverse needs of young adults and the literary materials available to satisfy these needs. [INTASC #1, 2, 3; CFPO 1. 2, 3, 6, 10]
9. To help teacher candidates examine the history of adolescence. [INTASC #1; CFPO 1, 2, 3, 6, 8]
10. To help teacher candidates use criteria employed by national organizations to analyze and evaluate young adults technological resources for their appropriateness for inclusion into the curriculum. [INTASC #1, 3, 6, 9; CFPO 1, 2, 3, 7, 10]
11. To help teacher candidates develop reflective practices in the interaction with young adult literature. [INTASC #1, 9; CFPO 1, 3, 8]
12. To help teacher candidates reinforce problem solving techniques through an introduction to problem-based learning with a discussion of selected young adult short stories. [INTASC #1, 4, 5; CFPO 1-12]

TOPICS TO BE COVERED:

1. Understanding adolescents and their literature. (3 hrs.)
   a. Trends in books for adolescents.
   b. Adolescents in our changing society.
2. Selection of materials for adolescents. (12 hrs.)
   a. Principles of selection.
   b. General criteria.
   c. Selection aids.
   d. Selection to meet diverse needs of the learner.
3. A rationale for using young adult literature in the secondary school classroom. (6 hrs.)
   a. The stages of reading development.
   b. The reading needs of the adolescent.
   c. The teacher's role.
   d. Discovering and utilizing the interests of teenagers in the book selection process.
   e. Building bridges.
   f. The young adult book as a motivational tool.
4. Literature for young adults. (3 hrs.)
   a. What is young adult literature?
   b. Types of young adult literature.

5. Methodology for incorporating young adult literature into the secondary school classroom. (6 hrs.)
   a. The thematic unit.
   b. The Language Arts classroom and the young adult book.
   c. The Social Studies classroom and the young adult book.
   d. The young adult book across the curriculum.
6. Experiencing and sharing young adult books. (12 hrs.)
   a. How to experience books.
   b. Sharing books.
   c. How to meet the needs of the young adult reader.
7. Censorship and the young adult book. (3 hrs)

REQUIRED TEXTS AND MATERIALS:

- Knickerbocker, Brueggeman, & Rycik (2012). *Literature for young adults: Books and more for contemporary readers*. Holcomb Hathaway, Publishers: Scottsdale, AZ. ISBN-13: 978-1934432433

YA literature we will read

- *Maus: A Survivor's Tale* by Art Spiegelman
- *The Book Thief* by Markus Zusak
- *Mississippi Trial, 1955* by Chris Crowe
- *Uglies* by Scott Westerfield
- *The Absolutely True Diary of a Part-Time Indian* by Alexie Sherman
- *The Fault in Our Stars* by Green
- *Experanza Rising* by P. M. Ryan
- *Speak* by Laurie Halse Anderson
- *A Long Way Gone* by Ishmael Beah
- *The Looking Glass Wars* by F. Beddor
- *The Perks of Being a Wallflower* by S. Chbosky
- As autobiography or Memoir from the list below (you will sign up in class for a literature group):
  - Ali, A. (2007). Infidel. NY: Simon and Schuster
  - Plath, S. (2009). The Bell Jar. NY: Harper Perennial
  - O'Brien, T. (2009). The Things They Carried. NY: Mariner
  - Wiesel, E. (1972). Night. United States: Hill and Wang

You will also need the follow types of books/readings for various class activities:

- Picture books (see textbook suggestions)
- Poetry selections (see textbook suggestions)
- Nonfiction books (see textbook suggestions)

METHODS OF INSTRUCTION:

Methods of instruction will include large group discussions (utilizing multi-media approaches, invited speakers, shared problem solving), small group assignments, and individual student assignments. Instruction and assignments will be both in class/Face-to-Face and through

myCourses platform with MSU access. Active involvement by the student with myCourses will be required in order to access many course documents, complete discussions with the instructor/peers, and access/submit assignments.

SUGGESTED STUDENT ACTIVITIES:

- **Readings.** Students will be responsible for reading and mastering the basic text and supplementary materials used for the course.
- **Performance on quizzes.** Students will take a 10-question quiz on each of the chapters in the text. These quizzes will be available on Learning Modules under the chapter headings.
- **Reader Sketch.** Students will be asked to describe their history as a reader from early childhood to today, noting their attitude and experiences in reading. They will also describe the people who encouraged or discouraged their reading and share their reading goals for the future. (Course Objectives: 1, 11)
- **Interview with a YA Reader.** Students will interview a YA readers and present their interview as a transcript with reflection. (Course Objectives: 1, 3, 4, 5, 7, 8, 11)
- **Book Talk.** Students will prepare and present a book talk for class. (Course Objectives: 1, 2, 3, 4, 6, 8, 11)
- **Literary Analysis Paper.** Students will complete a literary analysis paper for one of the novels the read in the course. (Course Objectives: 1, 2, 3, 5, 10)
- **Reading Log.** Students will complete a reading log, including information for each young adult novel they read during the semester. (All Course Objectives)
- **Book Activity Set.** Students will create a set of five activities for a young adult novel of their choice. Activities will be constructed to help young adults understand, respond to, and enjoy the selected book. (All Course Objectives)
- **Class Discussion Activities.** Students will complete multiple response/reflection activities, including discussion on forums, partner reflections, tweeting about literature, and so forth. (All Course Objectives)

ACADEMIC INTEGRITY: HONOR CODE:

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information visit: http://students.msstate.edu/honorcode

Please note that **Plagiarism** is defined and clarified within the honor code as follows:

1. **Plagiarism:**
   The appropriation of another person's ideas, processes, results, or words without

giving appropriate credit.

Clarification:

a. Intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper credit).
b. Failing to credit sources used in a work product in an attempt to pass off the work as one's own.
c. Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources.
d. The Internet, data bases and other electronic resources must be cited if they are utilized in any way as resource material in an academic exercise.

General information pertaining to plagiarism:

a. Faculty members are responsible for identifying any specific style/format requirement for the course. Examples include, but are not limited to, American Psychological Association (APA) style and Modern Languages Association (MLA) style.
b. Direct Quotation: Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged in the text by citation or in a footnote or endnote.
c. Paraphrase: Prompt acknowledgment is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment,..." and then conclude with a footnote or endnote identifying the exact reference.
d. Borrowed facts: Information gained in reading or research, which is not common knowledge, must be acknowledged.
e. Common knowledge: Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials, which add only to a general understanding of the subject, may be acknowledged in the bibliography and need not be footnoted or endnoted.
f. Footnotes, endnotes, and in-text citations: One footnote, endnote, or in-text citation is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgment made. Similarly, when a passage is paraphrased, acknowledgment is required.

TECHNOLOGY:

Technology failures (i.e. a frozen hard drive, an erased disk, an out-of-ink printer, a lost flash drive, etc.) are not valid excuses for late or missing assignments. It is your responsibility to create multiple back-up copies of all written assignments, to keep your printer operational, and to leave enough time to respond to problems. Remember: late assignments will not be accepted. Back up your work.

DIVERSITY:
Issues of diversity will be inherent in all discussions and activities completed as part of this course. Our students live and function in a diverse world; as such, teachers must develop an understanding of diversity as it relates to students and their worlds. Diversity is addressed through the variety of book choices and readings in class. Specific to course objectives, students will also examine this material for appropriateness to use with diverse learners.

DISABILITY:
In accordance with section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act, Mississippi State University reasonably accommodates students who demonstrate, through appropriate documentation, a qualified disability. The department of Student Support Services (SSS) is the designated unit on campus where students with disabilities identify themselves when requesting academic accommodations. For additional information, contact SSS at 325-3335, or visit the SSS website or office for more information.

EVALUATION OF STUDENT PROGRESS:
Written assignments must follow the Formatting Guide, APA style for citing sources, and must be carefully edited using Standard English Grammar. If they are not, you will lose 5% and be required to complete the Conventions Explanation Document. In order for you to receive the feedback that you need and to demonstrate a level of professionalism appropriate for beginning teachers, you must turn in assignments on time. Late papers will not be accepted. If you are absent the day something is due, email it to me. Papers will not be accepted in class after the due date unless other arrangements have been made due to extenuating circumstances. Grades will be determined based primarily on the criteria established in the General Grading Rubric and individual rubrics and criteria for each assignment.

Grading Scale:

A = 93 – 100%
B = 84 – 92%
C = 76 – 83%
D = 75 – 69%
F = < 69%

COURSE ASSIGNMENTS/ACTIVITIES:

Reader Sketch	5%
Interview with a YA reader	5%
Book Talk	10%
Literary Analysis Paper	15%
Book Sheets	20%
Book Activity Sets	10%
Class Discussion Activities	15%
Performance on quizzes and exam	20%

BIBLIOGRAPHY:

Allen, J. (2000). Yellow brick roads: Shared and guided paths to independent reading, 4-12. Portland, ME: Stenhouse.

Anderson, J. (2009). The book whisperer: Awakening the inner reader in every child. Hoboken, NJ: Jossey-Bass.

Andrasick, K. (1990). Opening texts: Using writing to teach literature. Portsmouth, NH: Heinemann.

Atwell, N. (1998). In the middle: New understandings about writing, reading and learning. NY: Boynton Cook.

Beach, R. et al. (2006). Teaching literature to adolescents. NH: Lawrence Erlbaum.

Beers, K. (2002). When kids can't read, what teachers can do: A guide for teachers 6-12. Portsmouth, NH: Heinemann.

Blau, S. (2003). The literature workshop: Teaching texts and their readers. NY: Boynton/Cook.

Gallagher, K. (2009). Readicide: How schools are killing reading and what you can do about it. Portland, ME: Stenhouse.

Smith, M. & Wilhelm, J. (2002). Reading don't fix no Chevys: Literacy in the lives of young men. Portsmouth, NH: Heinemann.

Stead, R. (2009). When you read to me. NY: Random House.

Tovani, C. (2000). I read it, but I don't get it: Comprehension strategies for adolescent readers. Portland, ME: Stenhouse.

Wilhelm, J. (2007). You gotta be the book: Teaching engaged and reflective reading with adolescents. NY: Teachers College.

CAMPUS 5 SYLLABUS

COURSE PREFIX & NUMBER: EDE 3343

COURSE TITLE: Teaching Adolescent Literature – Campus 5

CREDIT HOURS: Three (3) Semester Hours

TYPE OF COURSE: Three Hours Lecture

CATALOGUE DESCRIPTION: Three hours lecture. A study of the types of literature read by older children and adolescents with emphasis upon the criteria for the choice of good books and knowledge of available books and teaching materials

COLLEGE OF EDUCATION CONCEPTUAL FRAMEWORK:

The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

COURSE OBJECTIVES:

1. To help teacher candidates develop an understanding and appreciation of the literature that meets the needs and interest of adolescents and young people. [INTASC #12, 3; CFPO 1-12]

2. To help teacher candidates examine and read a variety of books for adolescents and young people that meet curriculum and recreational needs. [INTASC #1, 7; CFPO 1, 2, 6, 10, 12]
3. To help teacher candidates develop competencies in using selection aids for books and other media. [INTASC #1; CFPO 1, 7, 12]
4. To help teacher candidate develop skills in presenting book talks, discussions, and compiling bibliographies. [INTASC #1, 3; CFPO 1-12]
5. To help teacher candidates identify the need for cultural diversity in young adult literature. [INTASC #1, 2, 3; CFPO 1-12]
6. To help teacher candidates develop an understanding of the utilization of effective book and non-book materials in the classroom. [INTASC #1; CFPO 1, 2, 3. 7, 12]
7. To help teacher candidates recognize the values of effective book and non-book material in the school program and in life. [INTASC #1; CFPO 1, 2, 3, 7, 12]
8. To help teacher candidates identify the diverse needs of young adults and the literary materials available to satisfy these needs. [INTASC #1, 2, 3; CFPO 1. 2, 3, 6, 10]
9. To help teacher candidates examine the history of adolescence. [INTASC #1; CFPO 1, 2, 3, 6, 8]
10. To help teacher candidates use criteria employed by national organizations to analyze and evaluate young adults technological resources for their appropriateness for inclusion into the curriculum. [INTASC #1, 3, 6, 9; CFPO 1, 2, 3, 7, 10]
11. To help teacher candidates develop reflective practices in the interaction with young adult literature. [INTASC #1, 9; CFPO 1, 3, 8]
12. To help teacher candidates reinforce problem solving techniques through an introduction to problem-based learning with a discussion of selected young adult short stories. [INTASC #1, 4, 5; CFPO 1-12]

TOPICS TO BE COVERED:

1. Understanding adolescents and their literature. (3 hrs.)
   a. Trends in books for adolescents.
   b. Adolescents in our changing society.
2. Selection of materials for adolescents. (12 hrs.)
   a. Principles of selection.
   b. General criteria.
   c. Selection aids.
   d. Selection to meet diverse needs of the learner.
3. A rationale for using young adult literature in the secondary school classroom. (6 hrs.)
   a. The stages of reading development.
   b. The reading needs of the adolescent.
   c. The teacher's role.
   d. Discovering and utilizing the interests of teenagers in the book selection process.
   e. Building bridges.
   f. The young adult book as a motivational tool.
4. Literature for young adults. (3 hrs.)
   a. What is young adult literature?
   b. Types of young adult literature.

5. Methodology for incorporating young adult literature into the secondary school classroom. (6 hrs.)
   a. The thematic unit.
   b. The Language Arts classroom and the young adult book.
   c. The Social Studies classroom and the young adult book.
   d. The young adult book across the curriculum.
6. Experiencing and sharing young adult books. (12 hrs.)
   a. How to experience books.
   b. Sharing books.
   c. How to meet the needs of the young adult reader.
7. Censorship and the young adult book. (3 hrs)

REQUIRED TEXTS AND MATERIALS:

- Knickerbocker, Brueggeman, & Rycik (2012). *Literature for young adults: Books and more for contemporary readers*. Holcomb Hathaway, Publishers: Scottsdale, AZ. ISBN-13: 978-1934432433

YA literature we will read

- *Maus: A Survivor's Tale* by Art Spiegelman
- *The Book Thief* by Markus Zusak
- *Mississippi Trial, 1955* by Chris Crowe
- *Uglies* by Scott Westerfield
- *The Absolutely True Diary of a Part-Time Indian* by Alexie Sherman
- *The Fault in Our Stars* by Green
- *Experanza Rising* by P. M. Ryan
- *Speak* by Laurie Halse Anderson
- *A Long Way Gone* by Ishmael Beah
- *The Looking Glass Wars* by F. Beddor
- *The Perks of Being a Wallflower* by S. Chbosky
- As autobiography or Memoir from the list below (you will sign up in class for a literature group):
  - Ali, A. (2007). Infidel. NY: Simon and Schuster
  - Plath, S. (2009). The Bell Jar. NY: Harper Perennial
  - O'Brien, T. (2009). The Things They Carried. NY: Mariner
  - Wiesel, E. (1972). Night. United States: Hill and Wang

You will also need the follow types of books/readings for various class activities:

- Picture books (see textbook suggestions)
- Poetry selections (see textbook suggestions)
- Nonfiction books (see textbook suggestions)

METHODS OF INSTRUCTION:

Technology will be used in both the delivery of course content and through course requirements completed by students. Methods of instruction will include large and small group discussions (utilizing multi-media approaches, shared problem solving, and invited speakers in virtual

classroom spaces), small group assignments, and individual student assignments. Instruction and assignments will be delivered through the MyCourses platform. Active involvement by the student with MyCourses will be required in order to access course documents, complete discussions with instructor/peers, and access/submit assignments.

SUGGESTED STUDENT ACTIVITIES:

- **Readings.** Students will be responsible for reading and mastering the basic text and supplementary materials used for the course.
- **Performance on quizzes.** Students will take a 10-question quiz on each of the chapters in the text. These quizzes will be available on Learning Modules under the chapter headings.
- **Reader Sketch.** Students will be asked to describe their history as a reader from early childhood to today, noting their attitude and experiences in reading. They will also describe the people who encouraged or discouraged their reading and share their reading goals for the future. (Course Objectives: 1, 11)
- **Interview with a YA Reader.** Students will interview a YA readers and present their interview as a transcript with reflection. (Course Objectives: 1, 3, 4, 5, 7, 8, 11)
- **Book Talk.** Students will prepare and present a book talk for class. (Course Objectives: 1, 2, 3, 4, 6, 8, 11)
- **Literary Analysis Paper.** Students will complete a literary analysis paper for one of the novels the read in the course. (Course Objectives: 1, 2, 3, 5, 10)
- **Reading Log.** Students will complete a reading log, including information for each young adult novel they read during the semester. (All Course Objectives)
- **Book Activity Set.** Students will create a set of five activities for a young adult novel of their choice. Activities will be constructed to help young adults understand, respond to, and enjoy the selected book. (All Course Objectives)
- **Class Discussion Activities.** Students will complete multiple response/reflection activities, including discussion on forums, partner reflections, tweeting about literature, and so forth. (All Course Objectives)

ACADEMIC INTEGRITY: HONOR CODE:

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

For additional information visit: http://students.msstate.edu/honorcode

Please note that **Plagiarism** is defined and clarified within the honor code as follows:

1. **Plagiarism:**
The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

Clarification:

a. Intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper credit).
b. Failing to credit sources used in a work product in an attempt to pass off the work as one's own.
c. Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources.
d. The Internet, data bases and other electronic resources must be cited if they are utilized in any way as resource material in an academic exercise.

General information pertaining to plagiarism:

a. Faculty members are responsible for identifying any specific style/format requirement for the course. Examples include, but are not limited to, American Psychological Association (APA) style and Modern Languages Association (MLA) style.
b. Direct Quotation: Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged in the text by citation or in a footnote or endnote.
c. Paraphrase: Prompt acknowledgment is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment,..." and then conclude with a footnote or endnote identifying the exact reference.
d. Borrowed facts: Information gained in reading or research, which is not common knowledge, must be acknowledged.
e. Common knowledge: Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials, which add only to a general understanding of the subject, may be acknowledged in the bibliography and need not be footnoted or endnoted.
f. Footnotes, endnotes, and in-text citations: One footnote, endnote, or in-text citation is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgment made. Similarly, when a passage is paraphrased, acknowledgment is required.

TECHNOLOGY:
Technology will be used in both the delivery of course content and through course requirements completed by students. Delivery of course content will use PowerPoint and video lecture presentations, materials on the Internet and MyCourses. All course assignments will be completed using appropriate software.

Technology failures (i.e., frozen hard drive, problems with connectivity) are not valid excuses for late or missing assignments. It is your responsibility to create multiple back-up copies of your assignments, to keep your equipment operational, and to leave enough time to respond to problems. Remember; late assignments will not be accepted.

DIVERSITY:
Issues of diversity will be inherent in all discussions and activities completed as part of this course. Our students live and function in a diverse world; as such, teachers must develop an understanding of diversity as it relates to students and their worlds. Diversity is addressed through the variety of book choices and readings in class. Specific to course objectives, students will also examine this material for appropriateness to use with diverse learners.

DISABILITY:
In accordance with section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act, Mississippi State University reasonably accommodates students who demonstrate, through appropriate documentation, a qualified disability. The department of Student Support Services (SSS) is the designated unit on campus where students with disabilities identify themselves when requesting academic accommodations. For additional information, contact SSS at 325-3335, or visit the SSS website or office for more information.

EVALUATION OF STUDENT PROGRESS:
Written assignments must follow the Formatting Guide, APA style for citing sources, and must be carefully edited using Standard English Grammar. If they are not, you will lose 5% and be required to complete the Conventions Explanation Document. In order for you to receive the feedback that you need and to demonstrate a level of professionalism appropriate for beginning teachers, you must turn in assignments on time. Late papers will not be accepted. If you are absent the day something is due, email it to me. Papers will not be accepted in class after the due date unless other arrangements have been made due to extenuating circumstances. Grades will be determined based primarily on the criteria established in the General Grading Rubric and individual rubrics and criteria for each assignment.

Grading Scale:
A = 93 – 100%
B = 84 – 92%
C = 76 – 83%
D = 75 – 69%
F = < 69%

COURSE ASSIGNMENTS/ACTIVITIES:

Reader Sketch	5%
Interview with a YA reader	5%
Book Talk	10%
Literary Analysis Paper	15%
Book Sheets	20%
Book Activity Sets	10%
Class Discussion Activities	15%
Performance on quizzes and exam	20%

BIBLIOGRAPHY:

Allen, J. (2000). Yellow brick roads: Shared and guided paths to independent reading, 4-12. Portland, ME: Stenhouse.

Anderson, J. (2009). The book whisperer: Awakening the inner reader in every child. Hoboken, NJ: Jossey-Bass.

Andrasick, K. (1990). Opening texts: Using writing to teach literature. Portsmouth, NH: Heinemann.

Atwell, N. (1998). In the middle: New understandings about writing, reading and learning. NY: Boynton Cook.

Beach, R. et al. (2006). Teaching literature to adolescents. NH: Lawrence Erlbaum.

Beers, K. (2002). When kids can't read, what teachers can do: A guide for teachers 6-12. Portsmouth, NH: Heinemann.

Blau, S. (2003). The literature workshop: Teaching texts and their readers. NY: Boynton/Cook.

Gallagher, K. (2009). Readicide: How schools are killing reading and what you can do about it. Portland, ME: Stenhouse.

Smith, M. & Wilhelm, J. (2002). Reading don't fix no Chevys: Literacy in the lives of young men. Portsmouth, NH: Heinemann.

Stead, R. (2009). When you read to me. NY: Random House.

Tovani, C. (2000). I read it, but I don't get it: Comprehension strategies for adolescent readers. Portland, ME: Stenhouse.

Wilhelm, J. (2007). You gotta be the book: Teaching engaged and reflective reading with adolescents. NY: Teachers College.

MISSISSIPPI STATE UNIVERSITY

Department of Curriculum, Instruction, and Special Education

Box 9705 • 310 Allen Hall • Mississippi State, MS 39762

Voice: (662)325-3747 Fax: (662)325-7857

To: Box Council and UCCC Committee Members

From: Elementary Education Faculty

RE: Support for proposals to offer EDE 3233 and EDE 3343 as online courses

Date: September 9, 2014

This letter of support is offered by elementary education faculty in Curriculum, Instruction, and Special Education for the proposals to offer EDE 3233 Teaching Children's Literature at the Elementary and Middle Levels and EDE 3343 Teaching Adolescent Literature as distance courses.

Elementary Education Faculty include: Kathleen Alley, Kenneth Anthony, Stephanie Bennett, Kristin Javorsky, Nicole Miller, Margaret Pope, and Rebecca Robichaux-Davis.

Thank you,

Elementary Education Faculty	Date
Margaret Pope	9-11-14
Kristin Javorsky	9-11-14
Kathleen Alley	9-11-14
[illegible]	9-11-14
Rebecca Robichaux-Davis	9-12-14
Kenneth Anthony	9-12-14

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education

Department: Curriculum, Instruction and Specia

Contact Person: Ryan Walker

Mail Stop: 9705 **E-mail:** ryan.walker@msstate.edu

Nature of Change: Delete

Date Initiated: 2/19/14 **Effective Date:** approval

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
EDS	9603	Practicum in College Teaching of Secondary Education	(3)

Current Catalog Description:

Teaching of at least one course in educaiton under the supervision of a senior staff member. Supervision of student teachers.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

	Date:
Approved: _____ Department Head	4/14/14
Rebecca Richardson Davis Chair, College or School Curriculum Committee	9/30/14
_____ Dean of College or School	9/30/14
_____ Chair, University Committee on Courses and Curricula	
_____ Chair, Graduate Council (if applicable)	
_____ Chair, Deans Council	

COURSE DELETION
EDS 9603 Practicum in College Teaching of Secondary Education

1. COURSE DESCRIPTION
   EDS 9603 Practicum in College Teaching of Secondary Education: 3 hours. Teaching of at least once course in education under the supervision of a senior staff member. Supervision of student teachers.

2. JUSTIFICATION
   EDS 9603 is a redundant course. The catalog also lists EDS 9413 Practicum in College Teaching. Both courses have exactly the same course description and syllabus. EDS 9413 is required in the C and I PhD degree program. EDS 9603 is not offered and not taken by students. Because it is a duplicate course, we would like to delete it. This will have no effect on any other courses or degrees.

3. CONTACT PERSON: Ryan Walker, RWalker@colled.msstate.edu, 325-3523

4. CROSS-LISTING: N/A

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education **Department:** CISE

Contact Person: Kent Coffey **Mail Stop:** 9705 **E-mail:** kcoffey@colled.msstate.edu

Nature of Change: Delete **Date Initiated:** 9/8/2014 **Effective Date:** upon appro\

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
EDX	4423	Teaching the Disadvantaged Child	(3)

Current Catalog Description:

The study of the disadvantaged child in terms of theories, concepts, cultures, and techniques of teaching and exploration of curricular innovations.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

	Date:
Approved: _____ **Department Head**	9/9/14
_____ **Chair, College or School Curriculum Committee**	9/30/14
_____ **Dean of College or School**	9/30/14
_____ **Chair, University Committee on Courses and Curricula**	
_____ **Chair, Graduate Council (if applicable)**	
_____ **Chair, Deans Council**	

Proposal
Delete EDX 4423

1. EDX 4423 Teaching the Disadvantaged Child. The study of the disadvantaged child in terms of theories, concepts, cultures, and techniques of teaching and exploration of curricular innovations.

   Contact Person: Kent Coffey, 325-3523, kcoffey@colled.msstate.edu

2. **Justification**:
   This course is no longer taught. The course title and description are not consistent with current understandings of disability or culture. This course is not required in any degree or as a perquisite for any class, and has not been offered for at least 5 years. Its deletion will not affect other courses or programs.

3. Crosslisting: N/A

4. Effective Date: Upon approval.

Date Submitted: 10/14/14 4:19 pm

Viewing: EDX 8393 : Seminar in Emotional/Behavioral Disabilities ~~Education for the Emotionally Disabled~~

Last edit: 11/04/14 1:46 pm

Changes proposed by: dgb19

In Workflow

1. 0620 Head
2. 06 Curr. Committee Chair
3. 06 Dean
4. Provost
5. Banner

Approval Path

1. 10/14/14 4:27 pm dgb19: Approved for 0620 Head
2. 11/04/14 1:46 pm rrr102: Rollback to 0620 Head for 06 Curr. Committee Chair
3. 11/06/14 2:07 pm dgb19: Approved for 0620 Head
4. 11/06/14 2:50 pm rrr102: Approved for 06 Curr. Committee Chair
5. 11/07/14 10:48 am tbj2: Approved for 06 Dean

Catalog Pages referencing this course	Curriculum, Instruction, and Special Education Department of Curriculum, Instruction, and Special Education
Title	Seminar in **Emotional/Behavioral Disabilities** ~~Education for the Emotionally Disabled~~
Proposed 30 Character Abbreviation	Seminar In Em/Bd
Subject Prefix	EDX
Course Number	8393
Department	Curriculum, Inst. & Special Ed (0620)

College or School	College of Education (06)
Contact Person	Name: Devon Brenner Phone: 7119 Email: dgb19
Date Initiated	
Effective Date	Spring 2015
Frequency	Summer
CIP Number	13.1001
Campus(es)	Campus 1, Starkville Campus 2, Meridian
Distance Learning Course	No
"Maymester" course	No
Core (General Education) Course	No

Course Details

Credit Hours	3
Catalog Description	(Prerequisite: EDX 8403.) Three hours lecture. A comprehensive study of contributing factors in emotional disabilities ~~disturbance~~ and ~~the~~ educational technology for the ~~of the~~ treatment of students with emotional and behavioral disorders. ~~emotionally handicapped children.~~

Course Modification

Itemized List and Description of Changes	Changed course description and title.
Course Content	No change.
Effect on Other Courses	No change.
Method of Instruction	~~Seminar~~ Lecture
Method of Delivery	Face to face
Current Course Outline	EDX 8393 Topics Covered.docx

Proposed Course Outline	EDX 8393 Topics Covered.docx
Current Syllabus	EDX 8393 Seminar in Education for Individuals with EmotionalBehavioral Disorders.docx
Proposed Syllabus	EDX 8393 Seminar in Emotional Behavioral Disabilities.docx
Method of Evaluation	No change.

Special education faculty sat down to complete a list of courses that should be changed. The majority of changes include changing antiquated or offensive language (e.g., mental retardation) to more accurate terminology (e.g., intellectual disabilities) and changing to person-first language (e.g., people with disabilities). We also seek to do things like change "parents" to "families" to reflect the reality of students' lives. Finally, several special education courses have course descriptions that either leave out the method of instruction or have an old or non-existent method of instruction (e.g., competency based sequence). Others are just wrong (two hours lecture, one hour practicum does not add up to three credits). These changes do not affect the special education or any other degree programs.
Removed prerequisite because it is not enforced/enforceable because EDX 8103 is not offered sufficiently.
Changed to person first language and more modern terminology.

Learning Outcomes	No change.
Academic Misconduct	No change.
Target Audience	N/A
Instructor of Record	Sandy Devlin
Letter of Support	EDX Letter of Support.pdf
Course reviewer comments	**rrr102 (11/04/14 1:46 pm):** Rollback: Thanks!

Key: 3199

The attached information was prepared by the Department of Curriculum, Instruction, and Special Education to summarize the EDX proposals submitted online.

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education **Department:** CISE

Contact Person: Kent Coffey **Mail Stop:** 9705 **E-mail:** kcoffey@colled.msstate.edu

Nature of Change: Modify **Date Initiated:** 9/8/2014 **Effective Date:** upon appro\

Current Listing in Catalog:
Symbol Number Title **Credit Hours** ( )

Current Catalog Description:
Multiple courses

New or Modified Listing for Catalog:
Symbol Number Title **Credit Hours** ( )

New or Modified Catalog Description:

Approved: _____ *Date:* 9/9/14
Department Head

Rebecca Robichaux Davis _____ 11-6-14
Chair, College or School Curriculum Committee

Teresa Jayroe _____ 11-6-14
Dean of College or School

_____ _____
Chair, University Committee on Courses and Curricula

_____ _____
Chair, Graduate Council (if applicable)

_____ _____
Chair, Deans Council

Proposal to Modify the Course Titles and Descriptions of Several EDX Courses

Special Education faculty request a series of technical changes or small changes to course titles and course descriptions. This work came about after the provost held a meeting with department heads where he asked department heads to work with faculty to clean up course descriptions to be sure they actually match courses and are accurate. It was suggested that departments engage in making small modifications/technical changes to course titles and descriptions as needed.

Special education faculty sat down to complete a list of courses that should be changed. The majority of changes include changing antiquated or offensive language (e.g., mental retardation) to more accurate terminology (e.g., intellectual disabilities) and changing to person-first language (e.g., people with disabilities). We also seek to do things like change "parents" to "families" to reflect the reality of students' lives. Finally, several special education courses have course descriptions that either leave out the method of instruction or have an old or non-existent method of instruction (e.g., competency based sequence). Others are just wrong (two hours lecture, one hour practicum does not add up to three credits). These changes do not affect the special education or any other degree programs and do not constitute any changes in syllabi or mode of instruction.

Special Education

Course	Current Course Title	New Name	Current Course Description	Proposed Course Description	Rationale
EDX 3223	Introduction to the Emotional/Behavioral Disorders	Introduction to Emotional/Behavioral Disorders	Three hours lecture *and field trips. Survey* to acquaint students *with emotionally disturbed and behaviorally disordered children, giving an overview of* the theoretical approaches in their education.	Three hours lecture. **Understanding** children https://www.frs.org/**with emotional/ behavioral disorders**. Overview of the theoretical approaches to their education.	Removed "field trips" because no field trips are held and "field trips" is not a valid type of course. Person first language
EDX 3233	Contingency Management with Exceptional Children	Contingency Management	*Competency-Based Instructional Sequence and field experience.* A study of the components of contingency management with emphasis on application in the field with exceptional children.	**Three hours lecture.** A study of the components of contingency management with emphasis on application in the field with exceptional children.	Removed "competency based instructional sequence" because this course is offered as a traditional lecture course. "competency based instructional sequence" is not a valid method of instruction.
EDX 4113 EDX 6113	Diagnostic-Prescriptive Methods and Materials for Early Childhood Disabled	Methods and Materials for Early Childhood Students with Disabilities	(Prerequisite: Admission to Teacher Education). Three hours of lecture *and laboratory work* including assessment and individualized programming utilizing methods and materials *for EMR and LD preschool and primary level children.*	(Prerequisite: Admission to Teacher Education). Three hours of lecture. **Field based.** Assessment and individualized programing utilizing methods and materials for preschool and **primary level children with special needs.**	Person first language. Also EMR (educably mentally retarded) is outdated and the course examines more than these disabilities.

EDX 4123 EDX 6123	Diagnostic-Prescriptive Methods and Materials for Elementary Age Disabled	Methods and Materials for Elementary Students with Disabilities	(Prerequisite: Admission to Teacher Education). Three hours of lecture *and laboratory work including* assessment and individualized programming utilizing methods and materials for EMR and LD elementary school-age children.	(Prerequisite: Admission to Teacher Education). Three hours of lecture. **Field based.** Assessment and individualized programming utilizing methods and materials for **elementary age children with disabilities.**	Person first language
EDX 4133 EDX 6133	Diagnostic-Prescriptive Methods and Materials for Secondary Age Disabled	Methods and Materials for Secondary Students with Disabilities	(Prerequisite: Admission to Teacher Education). Three hours of lecture *and laboratory work including* assessment and individualized programming utilizing *methods and materials for EMR and LD secondary school-age children.*	(Prerequisite: Admission to Teacher Education). Three hours of lecture. **Field based.** Assessment and individualized programming utilizing methods and materials for **secondary age children with disabilities.**	Person first language
EDX 4353 EDX 6353	Assistive Technology in Special Education		Three hours lecture. Application of adaptive technology with *microcomputers* in the education of students with special needs.	Three hours lecture. Application of assistive technology in the education of students with special needs.	Remove "microcomputers" and changed "adaptive" to assistive to match title and —course covers much more technology and terminology (microcomputers, adaptive) is dated
EDX 4413 EDX 6413	Working with Parents of Exceptional Children	Working with Families of Students with	Three hours lecture. A study of the development, goals, and objectives of	Three hours lecture. A study of the development, goals and objectives of	Person first language. Change parents to families.

		Disabilities	organized parent educational groups. A study of problems of *parents of children who have disabilities.*	parent groups. A study of problems of families who **have children with disabilities.**	
EDX 4503 EDX 6503	Teaching the Severely and Profoundly Impaired Children	Teaching Students with Severe Disabilities	*Two hours lecture. One hour practicum.* A survey of operational models and techniques to be *implemented with the Severely/Profoundly Impaired*; to include curriculum, methods and administrative educational adjustments.	**Three hours lecture.** A survey of operational models and techniques to be implemented with **students who have severe** disabilities to include curriculum, methods, and administrative educational adjustments.	The course is a three-hour lecture. One hour practicum is incorrect, fixing punctuation
EDX 4603 EDX 6603	Children and Youth with Physical/Multiple Disabilities	Students with Physical/Multiple Disabilities	Educational implications and adaptations of procedures in schools, homes, hospitals and special schools for children with orthopedic and/or neurological impairments.		
EDX 4613 EDX 6613	Teaching Children and Youth with Physical/Multiple Disabilities	Teaching Students with Physical/Multiple Disabilities	(Prerequisite: Admission to Teacher Education). Three hours lecture. Methods and materials applicable to teaching *children and youth* with physical or multiple conditions that are the results of neurological or orthopedic impairments.	(Prerequisite: Admission to Teacher Education). Three hours lecture. Methods and materials applicable to teaching **students** with physical or multiple conditions which are the results of neurological or orthopedic impairments.	Change children and youth to students to reflect that students can be any age.
EDX 4623	Curricular and Mobility	Adaptations for	Three hours lecture. The		

EDX 6623	Adaptations for Physical/Multiple Disabilities	Students with Physical/ Multiple Disabilities	study of motor functions including range of motion, gait training, and other environmental adjustments that can be implemented by classroom teachers.		
EDX 8143	Early Education for the Disabled	Early Education for Students with Disabilities	Three hours lecture. Rationale; characteristics; educational approaches; exemplary programs; research in the field.		
EDX 8163	Teaching Strategies for the Gifted	Teaching Strategies for Students who are Gifted	(Prerequisite: Consent of instructor.) Teaching approaches, development of special problems, selection of materials, and remediation of problems related to learning.		Change title for person first language.
EDX 8173	Special Education in the Regular Classroom	No change	Three hours lecture. Provides a greater understanding of the *handicapped child* who may be in the regular classroom and suggests methods and techniques for teaching *the handicapped student* in the regular classroom.	Three hours lecture. Provides a greater understanding of **children with disabilities** who may be in the regular classroom and suggests methods and techniques for teaching **students with disabilities** in the regular classroom.	Person first language
EDX 8213	Practicum:	Practicum:	One hour seminar, three		

	Remediation of Special Education Populations	Remediation of Students with Disabilities	hours practicum. Selection, utilization and evaluation of specialized remedial materials and techniques with special education populations.		
EDX 8303	Seminar in Mental Retardation	Seminar in Intellectual Disabilities	(Prerequisite: EDX 8103). Three hours lecture. An advanced course dealing with the condition of mental retardation. Educational implication and research involving those *classified as mentally retarded.*	(Prerequisite: EDX 8103). Three hours lecture. An advanced course dealing with intellectual disability. Educational implications and research involving people **with intellectual disabilities.**	More current terminology
EDX 8393	Seminar in Education for the Emotionally Disabled	Seminar in Emotional/ Behavioral Disabilities	*(Prerequisite: EDX 8403).* Three hours lecture. A comprehensive study of contributing factors in *emotional disturbance* and the educational technology of the treatment of *emotionally handicapped children.*	Three hours lecture. A comprehensive study of contributing factors in **emotional disabilities** and educational technology for the treatment of students with **emotional and behavioral disorders.**	Prerequisite is not enforced/enforceable because EDX 8403 is not offered sufficiently. Person first and modern terminology.
EDX 8403	Teaching the Emotionally Disabled	Teaching Students with Emotional/Behavioral Disabilities	Three hours lecture and *practicum*. The curriculum, methods, and principles and problems of working *with the emotionally disabled.*	Three hours lecture. The curriculum, methods, principles and problems of working with students with **emotional and behavioral disorders.**	Person first and accurate terminology. Fix course methods.

To: Box Council and UCCC Committee Members

From: Special Education Faculty

RE: Support for the modifications to course titles and course descriptions for EDX courses

Date: September 9, 2014

This letter of support is offered by special education faculty in Curriculum, Instruction, and Special Education for modifications to course titles and descriptions for multiple special education courses with out-of-date terminology.

Special Education Faculty include: Kent Coffey, Penny Craven, Sandy Devlin, Lisa Johnson and Bethany McKissick.

Thank you,

Special Education Faculty	Date
Kent Coffey	9/10/14
Sandy Devlin	9/10/14
Lisa Johnson	9/15/14
Bethany McKissick	9/17/14

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Engineering **Department:** Aerospace

Contact Person: Tom Lacy **Phone:** 5-1148 **E-mail:** lacy@ae.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** 2/3/14 **Effective Date:** 5/15/14

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
ASE	6013	Direct Project in ASE	(3)

Current Catalog Description:

(Contact hours and title to be arranged). An individual professional project open only to candidates for the Master of Science degree (non-thesis option) Formal written and oral project reports are required.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved: _____ **Department Head**	***Date:*** 9/3/14
_____ **Chair, College or School Curriculum Committee**	9/3/14
_____ **Dean of College or School**	10/30/14
_____ **Chair, University Committee on Courses and Curricula**	
_____ **Chair, Graduate Council (if applicable)**	
_____ **Chair, Deans Council**	

JAMES WORTH
BAGLEY
COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY
AEROSPACE ENGINEERING
P.O. Box A
Mississippi State, MS 39762

January 9, 2014

Dear Sir/Madam,

The purpose of this letter is to certify that the Graduate Committee of the Aerospace Engineering department at Mississippi State University has reviewed and does support the offering of ASE 6013 (Directed Project in Aerospace Engineering) as a distance-education course. Our Department currently offers two distance-education programs: a MS program and an Aerospace concentration for the Engineering PhD Program. This course will be an integral part of the offerings for the MS program (non-thesis option).

Should you have any questions concerning this matter, please do not hesitate to contact me.

Sincerely,

J. Mark Janus
Graduate Committee Chair

Yang Cheng

David Thompson

Graduate Committee Members

Tom Lacy
Professor & Interim Department Head

Mississippi State University

Distance Education Offering:
ASE 6013 Directed Project in Aerospace Engineering

CATALOG DESCRIPTION
ASE 6013. Directed Project in Aerospace Engineering. (3) (Contact hours and title to be arranged.) An individual professional project open only to candidates for the Master of Science degree (non-thesis option). Formal written and oral project reports are required.

JUSTIFICATION FOR DISTANCE EDUCATION OFFERING
Distance education provides students who are not able to come to the main MSU campus the opportunity to take courses as credit toward one of the graduate programs offered by MSU. It also provides individuals the flexibility to take courses at a time that best meets their personal schedule. ASE 6013 allows students in the non-thesis MS program to complete a semester-long professional project before graduation.

TARGET AUDIENCE
Students enrolled in the Aerospace Engineering (ASE) distance education program offered by the Bagley College of Engineering. Only MS students choosing the non-thesis option are allowed to register for this course.

LEARNING OUTCOMES
Demonstrate the capability to plan and conduct a professional project in Aerospace Engineering, including satisfactory written and oral communication of the results.

DETAILED COURSE OUTLINE
No detailed Course Outline is available, due to the nature of this offering (similarly to what is currently done for a Directed Individual Study).

METHOD OF EVALUATION
Evaluation of the level of achievement of the project goals by the course instructor, with input from the members of the student's examination committee, as needed.

DETERRING ACADEMIC MISCONDUCT
Each distance student must have a proctor, approved by the home department of the Instructor of Record. All professional projects will be new or substantially revised each time this course is offered.

METHOD OF INSTRUCTION
Code I (Directed Individual Study)

METHOD OF DELIVERY
Code F (face to face), Code O (online, Internet, Web-based).
Web-based: assignments, handouts, and student feedback will be handled by myCourses. The formal written report will be uploaded to myCourses for review by the Instructor of Record. The formal oral presentation will be conducted using two-way video conferencing.

DELIVERY STATEMENT

This distance education course will not violate the Provost's policies on Campus 5 offerings.

CONTACT PERSON

Tom Lacy, Interim Dept. Head
Walker 330A; Phone: 325-1148
Email: lacy@ae.msstate.edu

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Engineering **Department:** Aerospace

Contact Person: Tom Lacy **Phone:** 5-1148 **E-mail:** lacy@ae.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** 2/3/14 **Effective Date:** 5/15/14

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
ASE	7000	Direct Individual Study	(3)

Current Catalog Description:

Hours and credits to be arranged.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved: _____ Department Head	*Date:* 9/3/14
_____ Chair, College or School Curriculum Committee	9/3/14
_____ Dean of College or School	10/30/14
_____ Chair, University Committee on Courses and Curricula	
_____ Chair, Graduate Council (if applicable)	
_____ Chair, Deans Council	

JAMES WORTH
BAGLEY
COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY
AEROSPACE ENGINEERING
P.O. Box A
Mississippi State, MS 39762

January 9, 2014

Dear Sir/Madam,

The purpose of this letter is to certify that the Graduate Committee of the Aerospace Engineering department at Mississippi State University has reviewed and does support the offering of ASE 7000 (Directed Individual Study) as a distance-education course. Our Department currently offers two distance-education programs: a MS program and an Aerospace concentration for the Engineering PhD Program. This course will be an integral part of the offerings for the new programs. Additionally, this course will be useful to students in the Master of Engineering distance-education program.

Should you have any questions concerning this matter, please do not hesitate to contact me.

Sincerely,

J. Mark Janus
Graduate Committee Chair

Yang Cheng

David Thompson

Graduate Committee Members

Tom Lacy
Professor & Interim Department Head

Distance Education Offering:
ASE 7000 Directed Individual Study

CATALOG DESCRIPTION
ASE 7000. Directed Individual Study. Hours and credits to be arranged.

JUSTIFICATION FOR DISTANCE EDUCATION OFFERING
Distance education provides students who are not able to come to the main MSU campus the opportunity to take courses as credit toward one of the graduate programs offered by MSU. It also provides individuals the flexibility to take courses at a time that best meets their personal schedule. ASE 7000 allows students in the MS program or PhD programs to complete a semester-long directed individual study in a topic not currently covered by one of the existing graduate courses.

TARGET AUDIENCE
Students enrolled in the Aerospace Engineering (ASE) distance education programs offered by the Bagley College of Engineering.

LEARNING OUTCOMES
Specific learning outcomes will vary with each offering of ASE 7000. Each time a section of ASE 7000 is proposed, detailed learning outcomes are created and approved, following current guidelines for on-campus offerings.

DETAILED COURSE OUTLINE
No detailed Course Outline is available, due to the nature of this offering. Each time a section of ASE 7000 is proposed, a detailed course outline is created and approved, following current guidelines for on-campus offerings.

METHOD OF EVALUATION
The Instructor of Record will evaluate the level of achievement of the course-specific learning outcomes.

DETERRING ACADEMIC MISCONDUCT
Each distance student must have a proctor, approved by the home department of the Instructor of Record.

METHOD OF INSTRUCTION
Code I (Directed Individual Study)

METHOD OF DELIVERY
Code F (face to face), Code O (online, Internet, Web-based).
Web-based: assignments, handouts, and student feedback will be handled by myCourses.

DELIVERY STATEMENT
This distance education course will not violate the Provost's policies on Campus 5 offerings.

CONTACT PERSON
Tom Lacy, Interim Dept. Head
Walker 330A; Phone: 325-1148
Email: lacy@ae.msstate.edu

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Butler-Williams Building, Suite B, 100 Walker Road, Mail Stop 9699 (325-0831).

College or School: **Department:** Computer Science and Eng.

Contact Person: Robert Wesley McGrew **Mail Stop:** 9637 **E-mail:** mcgrew@cse.msstate.edu

Nature of Change: **Date Initiated:** **Effective Date:**

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
			( )

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
CS	4363/6363	Software Reverse Engineering	(3)

New or Modified Catalog Description:
(Prerequisite: CSE 4733/6733). Three hours lecture. Software specification recovery and malicious software analysis. Tools and techniques for analyzing compiled programs and communications in the absence of documentation.

		Date:
Approved:	Donna S Reese	9/16/14
Department Head		
	Thomas D White	11/11/14
Chair, College or School Curriculum Committee		
	for Masoud Rais - Rohani	11/11/14
Dean of College or School		
Chair, University Committee on Courses and Curricula		
Chair, Graduate Council (if applicable)		
Chair, Deans Council		

New Course Proposal

Changes saved but not submitted

Viewing: CSE 4363 : Software Reverse Engineering

Last edit: 09/15/14 11:30 am

Title	Software Reverse Engineering
Proposed 30 Character Abbreviation	Software Reverse Engineering
Subject Prefix	CSE
Course Number	4363 Split Level with undefined
Department	Computer Science & Engineering (0735)
College or School	Bagley College of Engineering (07)
Contact Person	Name: Phone: Email: Dave Dampier 325-2756 dampier@dasi.msstate.edu
Date Initiated	
Effective Date	Spring 2015
Frequency	Spring
CIP Number	110701
Campus(es)	Campus 1, Starkville Campus 5, Distance
Distance Learning Course	No
"Maymester" course	No
Core (General Education) Course	No

Split-Level Course	Yes

Course Details

Credit Hours	3
Catalog Description	(Prerequisite: CSE 4733/6733). Three hours lecture. Software specification recovery and malicious software analysis. Tools and techniques for analyzing compiled programs and communications in the absence of documentation.
Method of Instruction	Lecture
Method of Delivery	Face to face Other Distance Learning
Course Outline	CSE4363_outline.docx
Course Outline of Campus 5	
Syllabus	syllabus.pdf
Method of Evaluation	This course is being proposed as a split level 4000/6000 course, with the following methods of evaluation for undergraduate and graduate students: Undergraduate: The following represents the percentage represented by each element of the class in undergraduates' final 100 point score: Percentage Description 50% Four Graded Practical Exercises 30% Malware Analysis Project 10% Unannounced Quizzes 10% Final Exam The following represents the percentage represented by each element of the class in graduate students' final 100 point score: Percentage Description 50% Five Graded Practical Exercises 30% Malware Analysis Project 10% Unannounced Quizzes 10% Final Exam Graduate Students Graduate students are required to perform an additional graded practical exercise in addition to the four already required of all students in the course. Graded Practical Exercises The primary method of evaluating student progress in this class is through graded practical exercises, which have three primary deliverables: answers to discussion and short-answer questions, a write-up of the hands-on exercise, and electronic deliverables for the hands-

on exercise. One graded practical will be limited in scope and take place entirely during one class period, forcing the students to complete the assignment under supervision of the instructor (to enforce academic honesty and observe progress). Other graded practicals will have an in-class and take-home portion. Graded practicals are scored on the following criteria:

Percentage Description
50% Electronic Deliverables
20% Write-up
30% Questions

Electronic deliverables may take the form marked-up disassembly, source code required to perform analysis, or patched/extracted program code. The write-up portion of a graded practical may take the form of a functional description of reverse engineered code, or documentation and testing logs of a developed tool.

Malware Analysis Project

For the semester-length malware analysis project, students form teams of up to three members, and will be assigned a piece of malicious software. The deliverables for this project include a whitepaper describing the teams' findings, documentation of division-of-labor, and a presentation of their work in front of the class. The grading criteria for this project is as follows:

Percentage Description
60% Whitepaper
10% Electronic deliverables
20% Presentation
10% Division-of-labor document

Final Exam

The final exam takes the form of a 3-hour time limited graded practical exercise to be performed by the students at the scheduled final examination time for the class. A set of discussion and short answer questions are to be submitted along with electronic deliverables (marked-up disassembly and/or source code). The grading criteria will follow that of the graded practical assignments described earlier

Letter Grades:

Numeric Grade Letter Grade
90 to 100 A
80 to 89 B
70 to 79 C
60 to 69 D
0 to 59 F

Justification

The Center for Computer Security Research at Mississippi State University was recently designated by the National Security Agency as a Center of Academic Excellence in Cyber Operations. The purpose of this program is to improve the security of the nation by supporting universities that educate and prepare students for work in specialized cyber operations, and perform research in the area of cyber operations. The addition of this course meets and exceeds mandatory program content required for a software reverse engineering class supporting this designation. The university is also currently designated as

an NSA Center of Academic Excellence in the areas of Information Assurance Education (CAE/IAE) and Research (CAE/R).

The course will serve as an advanced computer security elective course for undergraduate and graduate students pursuing research and job opportunities in the areas of information security, forensics, and cyber operations. Students participating in the Information Assurance certificate program will be able to apply the course towards earning the certificate as an advanced elective course. In the course's time as a special topics course in the Spring 2013 semester, students have received job offers from government and non-government agencies as a direct result of the skills and knowledge gained in the course.

Software reverse engineering is used in many areas of computer security and forensics. Vulnerability analysts use the techniques described in this class to find vulnerabilities that exist as a result of design and programmer error in software. Penetration testers and "red teams" use reverse engineering techniques to develop and use exploit software used to test the security of organizations. Malicious software and forensic analysts use reverse engineering to identify the purpose of unknown malicious code, find indicators of compromise, develop defenses, and find evidence to establish attribution.

After completing this course, students will be able to use existing static and dynamic reverse engineering tools, as well as develop new tools, to analyze software of unknown origin and/or purpose. Students will be able to recover functional descriptions of malicious software and identify indicators of compromise on hosts and networks.

Academic Misconduct

Each graded practical assignment includes discussion of how the MSU Honor Code specifically applies to that assignment, and students will be required to cite sources for resources they use in those assignments. Graded practical assignments have an in-class component that allows the instructor to observe students performing their own work. Deliverables for the assignments include written analysis that would act to deter direct plagiarism.

For distance section of this course offered at the ERDC site in Vicksburg, exam proctors are provided by the ERDC administration.

Target Audience

Undergraduate and graduate students in CSE and ECE that have an interest in reverse engineering, analysis of malicious software, and cyber operations.

For the distance section of this course, the target audience is professionals at the ERDC in Vicksburg. Any core campus student or Vicksburg distance student are eligible to take the course.

Explanation of Duplication

There is no duplication of material in this course. Aspects of the course build upon concepts discussed in the CSE 4733/6733 Operating Systems course with practical examples of current implementation. While assembly language is covered briefly in the Microprocessors I course, it is on a completely different computer platform.

Additional Information

This course will not violate the Provost's policies on Campus 5 offerings.

No additional resources are required to support this course, beyond what is currently available in the CSE department.

Letter of Support

Course reviewer comments

- Introductory Topics (5 Contact Hours)
    b. Defining Reverse Engineering
    c. Analysis Environment
    d. Malicious Software Safety
- Languages and Data Structure (9 Contact Hours)
    a. IA32 Assembly Language & Architecture
    b. Portable Executable Format
    c. Linking & Loading
    d. Microsoft Windows API
    e. C/C++ Constructs in Assembly
- Reverse Engineering Tools (6 Contact Hours)
    a. Disassemblers
    b. Debuggers
    c. Monitoring Software
- Malicious Software Behavior (7 Contact Hours)
    a. API Usage
    b. Covert Launching
    c. Unpacking
    d. Network Communication
- Anti-Reverse Engineering (7 Contact Hours)
    a. Encoding and Encryption
    b. Code Obfuscation
    c. Anti-Disassembly
    d. Anti-Debugging
    e. Anti-Virtualization
- Tool Development (6 Contact Hours)
    a. Binary Instrumentation
    b. Command & Control
    c. Disassembler Plugins
    d. Debugger Plugins
- Reverse Engineering Case Studies (5 Contact Hours)
    a. Cyber-Crime Toolkit Analysis
    b. Cyber-Espionage Analysis
    c. Vulnerability Analysis

For Campus 5 students, we use live video conferencing. The schedule is the same for both Campus 1 and Campus 5 students.

Syllabus: CSE6990 Special Topics - Software Reverse Engineering

This course serves as an introduction to software reverse engineering, primarily as it relates to answering questions about the internal operation of compiled, executable machine code without the presence of source code or other documentation. This has immediate application to the field of malicious software (malware) analysis, which we will focus on as the targets of our reverse engineering in this class. The same techniques apply to other fields in information security and forensics, such as vulnerability analysis and memory forensics

The course has a strong practical component, and students will become comfortable with a number of tools frequently used by those that make this their profession.

Course Information

- Instructor: Dr. Wesley McGrew
  - Office hours: Mondays and Wednesdays 1:00 PM to 2:30 PM, or by appointment
  - Contact through MyCourses messaging feature ("Communicate")
  - Email: mcgrew@cse.msstate.edu
- Meeting Times: Monday, Wednesday, Friday from 10:00 AM to 10:50 AM
- Location: Butler 100
- Course information and materials available to students on MyCourses

Student Prerequisites and Background

The prerequisite for this class is CSE 4733/6733, Operating Systems. Directly, this provides the background needed to understand concepts that you'll directly observe in this class, such as memory management, processes, and threads. This also means that students will have taken ECE 3724, Microprocessors, which gives some brief experience with assembly language and low level programming. You may need to study hard to quickly get up to speed with IA32 assembly from this background.

Students will have long-since had programming experience in high-level languages, likely Python and C++ their freshman and sophomore years here at MSU. Some C concepts and syntax that you may have glossed over in favor of C++ conveniences may be unfamiliar, but we'll try to cover it as we go, or at least point out some resources.

Students should be comfortable programming in Python. We will be looking at tools/plugins written in Python and how to create our own. If you aren't familiar with Python, the online documentation has a tutorial that will quickly get you up to speed.

Required Materials

- **Required Textbook:** *Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software*, Michael Sikorski and Andrew Honig, No Starch Press 2012, ISBN: 1593272901
- *PC Assembly Language*, Paul A. Carter, 2006. Great brief introduction to assembly, freely available on Dr. Carter's website.
  - http://www.drpaulcarter.com/pcasm/

- Intel 64 and IA-32 Architectures Software Developer Manuals - The "combined volume" is unwieldy, go for the 3-volumes in separate PDFs version. It's nice having the whole instruction set in one PDF.
    - http://www.intel.com/content/www/us/en/processors/architectures-software-developer-manuals.html
- *Linkers and Loaders* by John Levine. The link is to Levine's website where he has the pre-copy-editing manuscript chapters.
    - http://www.iecc.com/linker/

Recommended Materials

- *The IDA Pro Book: The Unofficial Guide to the World's Most Popular Disassembler*, Second Edition, Chris Eagle, No Starch Press 2012, ISBN: 1593272898
- Open Security Training – Video classes on *reverse* engineering related topics. The "Intro to X86" course is *highly* recommended to students learning assembly language at the beginning of this class
    - http://opensecuritytraining.info/Training.html
- MSDN Library - Bookmark this, primarily for looking up Windows API functions.
    - http://msdn.microsoft.com/en-us/library/ms123401.aspx
- Python Documentation - We'll be scripting things in python. If you didn't learn it in an earlier class, the tutorial here will get you up to speed. Even if you're familiar, bookmark this for the library documentation.
    - http://docs.python.org/2.7/
- *Thinking in C++* - Freely downloadable from author Bruce Eckel's website. You'll need something on-hand like this to refer to on C/C++ syntax.
    - http://www.mindviewinc.com/Books/downloads.html

Attendance

Attendance is mandatory, though roll may not always be taken. Class will begin at the scheduled time for each meeting, so those that arrive late will often miss important announcements, lecture material, and time-limited quizzes. Graded material missed by a student (through non-attendance or tardiness) will be recorded as a zero unless an appropriately documented excuse is provided.

MyCourses

All course materials and announcements will be made available through the MyCourses system. The messaging system will be used for most communications between the students and the instructor to ensure that discussion of individuals' grades takes place over a secure channel. Students are expected to log in and check this daily.

Student Laptop

Students are required to have their own laptop, on which they will set up their own virtual machine for reverse engineering software. Graded practical assignments will have components that must be completed in-class, requiring students to bring their own laptops. Requirements for the virtualized environment will be discussed in class. Students are responsible for creating and maintaining proper operation of their own work environment, and will not be allowed to borrow or copy another student's environment.

We will be working with real, live, and dangerous malware samples in this class. Students will be carefully trained and tested on the handling of live samples before being instructed to examine any. It is each student's individual responsibility to ensure that their analysis virtual machines are suitably isolated from real networks, and their host OS.

If you have important, valuable, or irreplaceable personal files and/or work for this class (and other classes) on your laptop, it is your responsibility to ensure that this data is backed up frequently. Accidental data loss due to your actions in this class are not an excuse for missing, incomplete, or late submission of assignments for this class or any other class.

Grading

Your final average will be calculated as follows:

- 40% - Graded Practical (4 for undergraduates, 5 for graduate students)
- 30% - Malware analysis project
- 10% - Unscheduled quizzes
- 20% - Final Exam

Letter grades are on a ten-point scale:

- 90 and above – A
- 80 to 89 – B
- 70 to 79 – C
- 60 to 69 – D
- 0 to 59 – F

Your final numeric grade will be rounded up to the next whole number if the portion of the number to the right of the decimal point is greater than or equal to half (.5). There will be no "drop grades". Bonus assignments may or may not be given to the entire class throughout the semester, but not on an individual basis on request.

Graded Practicals

Graded practicals are your tests for this course. There may be any combination of in-class and take-home sections for you to complete. Every graded practical will require that you have both a theoretical understanding of the material, and the practical ability to reverse engineer actual software.

Malware Analysis Project

Students may work alone or with a partner on a semester-long project to select and analyze a real malware sample. Students will be graded on:

- Selecting a sample, determining that it is of suitable complexity, writing a proposal, and getting it approved by the instructor by a due date early in the semester.
- A whitepaper that describes the findings. The paper should be submitted in PDF format, and will be graded on technical accuracy, the ease of which someone in this field can follow it, reproducibility of your findings, professional formatting, spelling, grammar, and technical writing style
    - All students are expected to seek the assistance of the university's resources for writing assistance.

- An electronic copy of associated files (marked-up disassembly, source code of tools developed, etc.)
- An evening presentation and question/answer session in front of the class and invited guests on your findings.

Unscheduled Quizzes

Quizzes will be given, unannounced, to test the student's understanding of assigned reading and to reward on-time attendance.

Final Exam

The final exam will be similar in format to the graded practicals, but more in-depth. Students will have the 3-hour final exam period to work on this longer exercise.

Ungraded Exercises

The textbook has a number of exercises at the end of each chapter that will help in preparing for graded practicals. Guided solutions are available at the end of the book, so these exercises will not be graded. It is *highly recommended* that you work through these assignments to test and reinforce your learning.

Late Penalty for Assignments

All assigned work is due on the date and time specified in the assignment. No extensions will be given. Assignments not turned in on time will be assessed a 20 point penalty immediately, with another 20 points deducted for each 24 hour period that elapses past the due time with no submission.

Academy Integrity

The MSU Honor Code states:

"As a Mississippi State University student, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information please visit: http://www.msstate.edu/dept/audit/1207.html where you will find links to the Honor Code, a violation report form, and documents describing planned communication, training, and intervention programs. Please note that reporting violations of the honor code is not optional - it is required.

Specifically, for this class, your honor code expectations include:

- Never represent another's work as his or her own, whether it is another student, a published author, or online source. No excuses.
- Seeking external research and resources is encouraged, though what you use should be appropriately cited
- There is no set format for citations in this class, however it should at least contain enough information that those reading your work will be able to identify and located your cited material easily

- For real-world malware samples, avoid already-published analyses of that sample (and closely related/variants). While in the real world, good analysis can be built on the work of others to reduce duplicated effort, for this class I'm more interested in the work you are able to do with the instruction and time constraints you are given. You are encouraged to look up techniques online, as well as analyses of other malware, but avoid those that target your assigned malware.
- On any ungraded exercises, you are encouraged to help each other, though you may want to limit your reliance on others if you find it difficult to do them on your own on a regular basis.
- On any graded assignment, you are not to seek assistance from anyone (other than an instructor, who may provide some technical assistance, but may not give much assistance on the substance of a problem), nor are you to give assistance to any other student, unless otherwise directed.
- All deliverables will be checked for evidence of plagiarism or cheating.

Preliminary Schedule

The following illustrates the schedule and planned topics, as it currently stands. It will change through the semester, due to instructor travel/leave and other circumstances. A separate schedule will be kept up-to-date on MyCourses, and it is the student's responsibility to be aware of assigned reading, work, and due dates. Graded practicals may be pushed to dates later than

Date	Topic	Assignment Due	Resources
January 13	Syllabus, Defining reverse engineering		Slides
January 15	Analysis environment setup, Malware safety	Read textbook chapters 0 and 2	Slides Tool list
January 17	IA-32 architecture and assembly language	Read textbook chapter 4 Demo your analysis environment to instructor for quiz grade	Slides
January 22	Basic analysis, linking and loading, PE headers	Read textbook chapters 1 and 3	Slides
January 24	Disassembly, Introduction to IDA Pro	Read textbook chapter 5	Slides
January 27	C constructs in assembly	Read textbook chapter 6	Slides Example code
January 29	C constructs in assembly, continued. End of graded practical 1 material, take-home portion assigned.		
January 31	Windows API and environment	Read textbook chapter 7, Malware project proposal due	Slides Proposal guidelines
February 3	C++ constructs in assembly	Read textbook chapter 20	Slides Example code Sabonal & Yason whitepaper/talk
February 5	**Graded Practical 1**	Practical take-home	

February 7	Debugging	Read textbook chapters 8 and 9	Slides
February 10	Debugging with Immunity Debugger		
February 12	Malicious behavior, End of graded practical 2 material, take-home portion assigned	Read textbook chapter 11	Slides
February 14	Malware launching	Read textbook chapter 12	Slides
February 17	**Graded Practical 2**	Practical take-home	
February 19	Encoding and encryption	Read textbook chapter 13	Slides
February 21	Encoding and encryption, continued		
February 24	Anti-disassembly	Read textbook chapter 15	Slides
February 26	Anti-debugging, End of graded practical 3 material, take-home portion assigned	Read textbook chapter 16	Slides
February 28	Packers & unpacking	Read textbook chapter 17	Slides
March 3	**Graded Practical 3**	Practical take-home	
March 5	Packers & unpacking continued		
March 7	Tool Development: Immunity Debugger pycommands		Slides
March 17	Tool development: IDA Python		
March 19	Tool development: binary instrumentation		
March 21	Monitoring malware command and control traffic, End of graded practical 4 material, take-home portion assigned	Read textbook chapter 14	Slides
March 24	64-bit reversing: Intro to x64	Read textbook chapter 21	Slides
March 26	Analyzing RAM dumps with Volatility		Slides
March 28	Malware case studies		
March 31	Malware case studies		
April 2	Malware case studies		
April 4	**Graded Practical 4**	Practical take-home	
April 7	ARM Architecture		Slides
April 9	ARM Architecture, continued		
April 11	Vulnerability analysis		Slides
April 14	Vulnerability analysis, continued		
April 16	Malware case studies	Malware project whitepapers and slides due	
April 21	Malware case studies, Graduate graded practical take-home portion assigned	Evening presentations	
April 23	Malware case studies	Evening presentations	

April 25	Malware case studies	Evening presentations	
April 28	Final exam review		
April 30	**Graduate Graded Practical**	Practical take-home	
May 6	**Final Exam (8AM to 11AM)**		

MISSISSIPPI STATE
UNIVERSITY
Computer Science and Engineering

September 18, 2014

University Committee on Courses and Curricula
Box 5268
Mississippi State, MS 39762

Dr. Swotzel, Chair:

Please find attached the Department of Computer Science and Engineering's proposal for a new course, CSE4363, Software Reverse Engineering. The faculty approved the creation of this course on August 23, 2013.

Please do not hesitate to contact me for more information.

Sincerely,

TJ. Jankun-Kelly, PhD
Courses and Curricula Chair, CSE
Associate Professor
Computer Science and Engineering

JAMES WORTH BAGLEY COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY

665 George Perry Street • 319 Butler Hall • Post Office Box 9637 • Mississippi State, MS 39762
tjk@cse.msstate.edu • 662.325.7504 Phone • 662.325.8997 Fax • www.cse.msstate.edu/~tjk/

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College: Forest Resources **Department: Sustainable Bioproducts**

Contact Person: Dr. Rubin Shmulsky Mail Stop: 9820 E-mail: rshumlsky@cfr.msstate.edu Phone:5-2243

Nature of Change: New Degree Program Date Initiated: August 2014 Effective Date: Fall 2015

Degree to be offered at: Mississippi State University, Starkville

Current Degree Program Name: None

New Degree Program Name: Bachelor of Science Sustainable Bioproducts

Major: Sustainable Bioproducts **Concentration: None**

Summary of Proposed Changes: To create a B.S. degree in Sustainable Bioproducts.

This program does not duplicate any other program at MSU or any of the private or public universities in Mississippi. The Bachelor of Science in Sustainable Bioproducts degree will require 124 credit hours for graduation. This degree will not have multiple curricula. There are no concentrations. No additional funds are being requested in support of this program. There will be no need for additional faculty or space for this new program.
Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/2014
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

[X] IHL Action Required

[ ] SACS Letter Sent

MISSISSIPPI STATE
UNIVERSITY™

College of Forest Resources
Forest and Wildlife Research Center

September 26, 2014

Dr. Kirk Swortzel
Chair, University Committee on Courses and Curricula
Mailstop 9699
244 Magruder Street
Mississippi State, MS 39762

Dear Dr. Swortzel:

I strongly support the new undergraduate degree program proposed by the Department of Sustainable Bioproducts. This degree program complements our existing undergraduate degree programs in Wildlife, Fisheries and Aquaculture; Forestry; and Natural Resources and Environmental Conservation very well. It is uniquely positioned to increase our college-wide enrollment while simultaneously providing courses that support and augment our existing programs.

The proposed degree program specifically addresses the state-wide employment needs of both the existing forest products industry and developing biofuels and bioproducts industries. The proposed curriculum is the result of considerable thought and research into the skills and expertise these targeted industries require in their employees. The faculty of the Department of Sustainable Bioproducts has built this new degree program from the ground up, developing and/or making substantial modifications to 20 courses to provide its students with exactly those skills. The entire faculty assisted in developing this new program and is fully committed to teaching it, once approved.

This degree program has my strongest support.

Sincerely,

George M. Hopper
Dean

Office of the Dean and Director
Box 9680 | Mississippi State, MS 39762 | (662) 325-2953 | (662) 325-0015 FAX
Department of Forestry • Department of Forest Products • Department of Wildlife, Fisheries and Aquaculture

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

George Hopper
Dean College of Forest Resources and
Director Forest and Wildlife Research Center
Box 9680
Mississippi State, Mississippi

September 26, 2014

Dear Dr. Hopper:

Please find the complete proposal package for the new undergraduate curriculum for the Department of Sustainable Bioproducts. The department put forth the new curriculum package to the College of Forest Resources Curriculum Committee, a vote was called, and the majority of committee members voted in favor of the curriculum package moving forward to the UCCC, with one abstention from the vote. Please provide a letter of support from the dean's office, such that the package can be delivered to the UCCC in time for the October 3 deadline for consideration.

Kindest Regards,

P. David Jones
Associate Extension Professor
College of Forest Resources Curriculum Committee Chair

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

September 1, 2014

Dr. P. David Jones
Chair, College of Forest Resources Curriculum Committee

Dr. Jones:

Please accept this letter of support for the Department of Sustainable Bioproducts new undergraduate curriculum package. This proposed curriculum is the result of two years of deliberations by the departmental faculty. By formal vote it has been approved by the Department faculty. With this letter, I as Department Head provide and document full support for this proposed curriculum.

Respectfully,

Rubin Shmulsky, Ph.D.
Department Head and Professor

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the Bachelor of Science in Sustainable Bioproducts and has voted to fully endorse the proposal.

As part of the proposal the Committee recommends the approval of the following modified courses:

1. FP 1103 Wood Technology and Products to SBP 1103 Introduction to Sustainable Bioproducts
2. FP 3012 Forest Industries to SBP 2012 Introduction to Bioproduct Industries
3. FP 4023/6023 Wood Chemistry to SBP 4023/6023 Lignocellulosic Biomass Chemistry
4. FP 4113/6113 Adhesives and Finishes to SBP 4113/6113 Adhesives and Biocomposites
5. FP 4143/6143 Composite Wood Products to SBP 4144/6144 Biocomposite Application and Manufacturing
6. FP 4213/6213 Wood Deterioration and Preservation to SBP 4213/6213 Deterioration and Preservation of Biomaterials
7. FP 4253/6253 Quantitative Methods in Forest Products and Furniture to SBP 4253/6253 Quantitative Methods in Sustainable Bioproducts

As part of the proposal, the Committee recommends the approval of the following new courses:

1. SBP 1203 Anatomy of Wood and Other Natural Materials
2. SBP 2123 Materials and Processing in Sustainable Bioproducts
3. SBP 3113 Biomaterial Physics and Mechanics
4. SBP 3123 Biomass to Bioproducts
5. SBP 3143 Biomass Characteristics and Production
6. SBP 4133/6133 Biorefinery Processes
7. SBP 4153/6153 Biomass Biological Conversion
8. SBP 4243/6243 Sustainable Bioproducts
9. SBP 4263/6263 Strength Design of Furniture as Green Product
10. SBP 4313/6313 Bioproducts and Environment
11. SBP 4333/6333 Bioproducts and Environmental Biotechnology
12. SBP 4443 Capstone Sustainable Bioproducts
13. SBP 4450 Undergraduate Research

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

As part of the proposal, the Committee recommends the deletion of the following courses:

1. FP 4313/6313 Environmental Principles
2. FP 4323/6323 Wood Physics
3. FP 4423/6423 Wood Mechanics

Finally, as part of the proposal, the Committee recommends the approval of the technical changes for the following courses:

1. FP 1001 First Year Seminar to SBP 1001 First Year Seminar
2. FP 2990 Special Topic in FP to SBP 2990 Special Topic in SBP
3. FP 4000 Directed Individual Study to SBP 4000 Directed Individual Study
4. FP 4990 Special Topic in FP to SBP 4990 Special Topic in SBP

Thank you for consideration of the proposed new degree program and the change in courses listed above.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Institution: Mississippi State University

Date of Implementation:	**Six Year Cost of Implementation:**	**Per Student Cost of Implementation:**
August 2015	Minimal*	Minimal*

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Sustainable Bioproducts	03.0101

Degree(s) to be Awarded:	**Credit Hour Requirements:**
Bachelor of Science	124 Hours

List any institutions within the state offering similar programs:
There are no similar programs at any other state university.

Responsible Academic Unit(s):	**Institutional Contact:**
CFR/ Department of Sustainable Bioproducts	Dr. Jerry Gilbert

Check one of the boxes below related to SACS COC Substantive Changes.

[X] **Proposed Program is Not a Substantive Change**	[ ] **Proposed Program is a Substantive Change**

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	5	**Year One**	0
Year Two	12	**Year Two**	0
Year Three	15	**Year Three**	0
Year Four	20	**Year Four**	4
Year Five	20	**Year Five**	10
Year Six	20	**Year Six**	13
Total	92	**Total**	27

Program Summary: This program seeks to provide educational opportunities, at the baccalaureate level, for sustainable bioproducts and related sectors. The state of Mississippi is blessed with ample forests and forest-conversion facilities. The forest products profession has grown and evolved dramatically in the past two decades. The profession maintains its traditional focus on sustainable and renewable structural products, while evolving to include wood and non-wood hybrid products that come from agricultural residues, other natural fibers, natural-based adhesives, and non-wood materials. To develop and train contemporary and future sustainable bioproducts professionals, this degree program is sought. Universally, college-level students desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. The sustainable bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, agriculture and wood fiberboards, wood polymer composites, and other contemporary engineered products. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make housing and other structures last longer via preservative treatments and better construction techniques. To a large degree this programmatic development maintains forest, lumber, and other related stakeholders at its core. Research and service to these constituent groups within the state remain critical to the department. This new academic offering will be developed to better meet student needs and to better prepare young professionals for work in these and other natural resource related fields – in both traditional jobs as well as in the new jobs of tomorrow. *No additional funds are being requested in support of this program.

Institutional Executive Officer Signature **Date**

Mississippi State University
College of Forest Resources
Department of Sustainable Bioproducts
New Program Proposal
Bachelor's Degree in Sustainable Bioproducts

Role and Mission

The proposed Bachelor of Science in Sustainable Bioproducts program represents the evolution of the forest products industry. This evolution maintains a strong foundation in products, manufacturing, sales, trading, and fundamental aspects of timber-derived products, materials, and structures. The forest products industry is an important and vital industry to Mississippi. Timber is recognized as an important commodity. This program also incorporates contemporary new products from biomass, agricultural residues, etc. Non-wood based bioproducts and materials such as structural and non-structural panels made from kenaf, wheat straw, rice hulls, corn stover, etc. have gained market viability in specialty, value-added applications. Additionally, specialty chemicals such as paints and adhesives from natural resources and bio-based energy such as that related to wood pellets, bio-oil, wood alcohol, etc. are increasingly important with respect to sustainable industrial production. Finally, this program incorporates an increasing amount of environmental concerns and interests, social / sustainability consciousness, and multidisciplinary factors. Training professionals to serve in these disciplinary sectors is within the mission of MSU and the Forest and Wildlife Research Center.

The mission of the Department of Sustainable Bioproducts is to enhance the intellectual, cultural, social, and professional development of its students by providing them with knowledge and skills needed to utilize and conserve diverse resources effectively. In this regard, the department's primary teaching responsibility is to provide high quality educational opportunities necessary to adequately prepare students for professional and scientific careers in sustainable bioproducts. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. Stakeholders of the Department are supportive of this proposal. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives. Jobs are now available in many fields, yet educated students are not available.

One mission of the College of Forest Resources is to achieve undergraduate enrollment consistent with the college and MSU goals. It is anticipated that this new program will attract new undergraduate students to the MSU. As such, it supports overall institutional enrollment growth. The home department, i.e. Sustainable Bioproducts, is heavily research centric. As such, it is anticipated that undergraduates will have ample opportunities to contribute to and participate in cutting-edge contemporary research. These experiences will then translate to enhanced undergraduate educational experiences.

Anticipated institutional impact would include:

- A Bachelor's degree program for Sustainable Bioproducts Department
- A program that does not duplicate any program of MSU or any other four-year institution in the state
- A program that will provide qualified graduates in a field where job opportunities are available, but there is an undersupply of graduates
- A program where undergraduates will have ample research opportunities which will make them sought after and more competitive for national graduate programs.

1. Degree Administration

The Bachelor of Science degree in Sustainable Bioproducts will be administered through the Department of Sustainable Bioproducts, College of Forest Resources.

The program will be initially directed by Dr. Rubin Shmulsky, Professor and Head of the Department of Sustainable Bioproducts. Dr. Shmulsky has been the Department Head of Sustainable Bioproducts (formerly Forest Products) since 2007. Prior to being department head, he worked and taught in the same department as well as at the University of Minnesota. During this time he taught a number of courses including Lumber Manufacturing, Furniture Production, Introduction to Wood Products and Technology, Physical Properties of Wood and Research Seminar. He co-authored the introductory textbook, Forest Products and Wood Science: An Introduction. Dr. Shmulsky will be responsible for program oversight, admission, curriculum development and ongoing program delivery and review. Faculty in the Department of Sustainable Bioproducts will assist Dr. Shmulsky with student recruitment, academic advisement, curriculum development and program review.

2. Educational Objectives

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques.

As such a graduate of this new degree in Sustainable Bioproducts will be able to:

- Understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to material science problems
- Understand the impact of sustainable bioproduct solutions in a societal and global context
- Function effectively as a member or leader of a team
- Write and apply written, oral, and graphical communication in both technical and non-technical environments
- Understand and commit to address professional and ethical responsibilities including a respect for diversity
- Graduate with a bachelor's degree in a field that is highly sought after.

The Sustainable Bioproducts Bachelor's program will not have multiple curricula. There are no concentrations.

3. Admission Requirements

There are no special admission requirements for this degree, thus they are the same as for MSU. The MSU admission requirements for freshman can be found at http://www.admissions.msstate.edu/freshman/requirements.php#full; requirements for transfer students are available at http://www.admissions.msstate.edu/transfer/; and requirements for international students may be found at http://www.admissions.msstate.edu/international/.

At this time, no articulation agreements have been established for any of the two- or four-year institutions. It is possible that articulation agreements could be established for some of the Mississippi 2-year colleges once the program is approved.

4. Professional Accreditation

There is no professional accreditation for this program.
It is not anticipated that a SACS visit would be needed.

5. Curriculum

Course Hours:

The Bachelor of Science in Sustainable Bioproducts degree will require 124 credit hours for graduation.

Proposed New Degree Description and Catalog Description:

PROPOSED NEW DEGREE DESCRIPTION	
Degree: Bachelor of Science Major: Sustainable Bioproducts Concentration: None	
The state of Mississippi is blessed with ample forests and forest-conversion facilities. The bioproducts industry is one of the largest economic contributors to Mississippi, as well as in the United States (>$15 billion/annum). Employment in the furniture, lumber, wood products, composites, and paper sectors of the economy far exceeds the employment of any other manufacturing sector in the state. The industry is large in terms of employment, both in Mississippi and nationwide. The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites that come from agricultural residues, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, natural-based adhesives, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Universally, college-level students desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. The mission of the Department of Sustainable Bioproducts is to enhance the intellectual, cultural, social, and professional development of its students by providing them with knowledge and skills needed to utilize and conserve diverse resources effectively. In this regard, the department's primary teaching responsibility is to provide high quality educational opportunities necessary to adequately prepare students for professional and scientific careers in sustainable bioproducts. The curriculum will prepare students for careers in fields such as federal environmental protection agency, policy makers, state's departments of environmental quality/protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, job opportunities also include bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.	
CONCENTRATION DESCRIPTION: No concentrations	
PROPOSED CURRICULUM OUTLINE	**Required Hours**
English (General Education): EN 1103 English Composition I or EN 1163 Accelerated Composition I EN 1113 English Composition II or EN 1173 Accelerated Composition II	6
Fine Arts (General Education): Any Gen Ed course	3
Natural Sciences: BIO 1134 Biology I BIO 1144 Biology II	8
Extra Science: CH 1043 Survey of Chemistry 1 CH 1053 Survey of Chemistry 2 CH 1051 Experimental Chemistry Laboratory	7

Math (General Education): MA 1313 College Algebra MA 1323 Trigonometry ST 2113 Introduction to Statistics or ST 3123 Introduction to Statistical Inference	9
Humanities (General Education): Any Gen Ed course	6
Social/Behavioral Sciences (General Education): 3 hrs from Gen Ed List 3 hrs must be from the Economics List below: AEC 2713 Intro Food Resource Economics or EC 2113 Principles of Macroeconomics or FO 4113 Forest Resources Economics	6
Oral Communication Requirement: CO 1003 Fund Public Speaking	3
Writing Requirement (Choose one): AIS 3203 Prof. Writing Ag Nat Res MGT 3213 Organizational Communication BIO 3013 Prof Writing for Biologists	3
MAJOR CORE COURSES REQUIRED: SBP 1103 Introduction to Sustainable Bioproducts SBP 1203 Anatomy of Wood and other Natural Materials SBP 2012 Introduction to Bioproduct Industries SBP 2123 Materials and Processing in Sustainable Bioproducts SBP 3123 Biomaterial Physics and Mechanics SBP 3123 Biomass to Bioproducts SBP 4253 Quantitative Methods in Sustainable Bioproducts (computer competency) SBP 4313/6313 Bioproducts and Environment SBP 4333/6333 Bioproducts and Environmental Biotechnology SBP 4443 Capstone Sustainable Bioproducts	29
MAJOR COURSES PROFESSIONAL ELECTIVES: SBP 3143 Biomass Characteristics and Production SBP 4000 Individual Study - variable hours SBP 4023/6023 Lignocellulosic Biomass Chemistry SBP 4113/6113 Adhesives and Biocomposites SBP 4133/6133 Biorefinery Processes SBP 4144/6144 Biocomposite Application and Manufacturing SBP 4153/6153 Biological Conversion of Biomass SBP 4213/6213 Deterioration and Preservation of Biomaterials SBP 4243/6243 Sustainable Bioproducts SBP 4450 Undergraduate Research in SBP – variable hours	18
PROFESSIONAL ELECTIVES: Choose any class that is 3000 level or above from the following subjects: ABE (Ag Bio Eng), AEC (Ag Econ), ARC 2713, BCH (Biochem), BCS (Build Const Sci), BIO (Biology), BIS (Bis Info Systems), BL (Bus Law), CE (Civil Eng), CH (Chemistry), EC (Economics), EE (Electrical Engr), EG (Engr Graphics), EM (Engr Mech), EPP (Entomology Plant Path), FIN (Finance), FO (Forestry), GR (Geography), IE (Industrial Eng), TKI (Industrial Tech), LA (Landscape Arch), MGT (Management), MKT (Marketing), MA (Math), ME (Mechanical Eng), NREC (Nat Res Environ Conser), PH (Physics), PS (Political Sci), PSS (Plant Soil Sci), SBP (Sustainable Bioproduct), ST (Statistics), WFA (Wildlife Fish Aquaculture)	18
Free Electives Any course offered at MSU	8
TOTAL HOURS	124

Exemplar Curriculum for B.S. Sustainable Bioproducts

Level	Fall Semester	Cr	Spring Semester	Cr
FR Year 1	EN 1103 English Comp I or EN 1163	3	EN 1113 English Comp II or EN 1173	3
	MA 1313 College Algebra	3	MA 1323 Trigonometry	3
	SBP 1103 Intro Sustain Bioproducts	3	SPB 1203 Anatomy of Wood & Materials	3
	CH 1043 Survey of Chemistry 1	3	CH 1053 Survey of Chemistry 2	3
	Humanities Elective 1	3	CH 1051 Exp. Chem Laboratory	1
			Social/Behav Elective 1	3
	Total Hours	**15**	**Total Hours**	**16**
May	SPB 2012 Tour of Industry	**2**		
SO Year 2	BIO 1134 Biology 1	4	BIO 1144 Biology 2	4
	SPB 2123 Materials and Processing	3	SPB 3113 Physics & Mechanics	3
	CO 1003 Public Speaking	3	SPB 3123 Biomass to Bioproducts	3
	ST 2113 or ST 3223 Statistics	3	Economics Elective	3
	Humanities Elective 2	3	Free Elective 1	3
	Total Hours	**16**	**Total Hours**	**16**
JR Year 3	SBP 4313 Bioprod & Environment	3	SBP 4333 Bioprod & Environ Biotech	3
	SPB Professional Elective 1	3	SPB Professional Elective 2	3
	Professional Elective 1	3	Professional Elective 2	3
	Free Elective 2	3	Professional Elective 3	3
	AIS 3202 Prof Writing Ag Nat Res or Writing requirement	3	Fine Arts Elective	3
	Total Hours	**15**	**Total Hours**	**15**
SR Year 4	SPB 4253 Quant Methods	3	SPB Professional Elective 5	3
	SPB Professional Elective 3	3	SPB Professional Elective 6	3
	SPB Professional Elective 4	3	SPB 4443 Capstone	3
	Professional Elective 4	3	Professional Elective 5	3
	Free Elective 3	2	Professional Elective 6	3
	Total	**14**	**Total**	**15**
TOTAL HOURS				**124**

SBP course descriptions are found in APPENDIX 1. All documentation including course forms and syllabus are included in this package.

There are no additional or special requirements for this degree other than outlined above.

6. Faculty

All faculty in the Department of Sustainable Bioproducts will teach within the new program except the Department Head, Dr. Rubin Shmulsky. Dr. Shmulsky will initially direct the program, acting as Undergraduate Coordinator, until the program becomes established.

Current faculty in the Department of Sustainable Bioproducts are listed below. The department has recently advertised for a faculty position, and once hired, this person will also be expected to teach within the new degree proposal. Abbreviated faculty CV's are provided in APPENDIX 2.

Dr. H. Michael Barnes, Professor
Research Interests:

- Physical properties of treated wood and composites
- Preservative and fire retardant treatments to extend the durability of building components
- Treatment variables affecting the uniformity of treatment of wood and composites
- New treatment technologies and processes

Teaching Areas:

- FP 4013/6013 - Wood Anatomy
- FP 4213/6213 - Wood Deterioration and Preservation
- FP 4323/6323 Wood Physics

New Degree Program:

- SBP 3113 Biomaterials Physics and Mechanics
- SBP 4213/6213 Deterioration and Preservation of Biomaterials
- SBP 4443 Capstone

Dr. Hamid Borazjani, Professor
Research Interests:

- In-situ and ex-situ bioremediation of organic chemical wastes in soil, water, wood, and sludges
- Evaluation of factors affecting bioactivity of microorganisms for bioremoval of hazardous chemicals
- Phytoremediation of heavy metals from soil and water
- Leaching potential of organic and inorganic wood preservatives from treated woods and contaminated soils
- Composting of treated and furniture wood wastes
- Use of plant based matrices for filtration of polluted water..

Teaching Areas:

- FP 3012 Forest Industries
- FP 8133 Environmental Issues in Forest Products

New Degree Program:

- SBP 2012 Introduction to Bioproduct Industries
- SBP 4313/6313 Bioproducts and Environment

Dr. Susan V. Diehl, Professor
Research Interests:

- Microbial succession in naturally durable wood species
- Effective Mold and Contaminant Remediation for Flood & Water Damaged Homes
- Understanding the copper tolerance mechanism of a brown rot fungus through transcriptomics
- Survey and detection of Phytophthora ramorum

Teaching Areas:

- FP 1103 - Wood Technology and Products
- FP 4313/6313 - Environmental Principles

New Degree Program:

- SBP 4313/6313 Bioproducts and Environment
- SBP 4333/6333 Bioproducts and Biotechnology
- SBP 4443 Capstone Sustainable Bioproducts

Dr. El Barbary Hassan, Assistant Professor
Research Interests:

- Biomass conversion to renewable biofuels
- Biomass conversion to sustainable bioproducts and value-added chemicals
- Utilization and characterization of biomass
- Wood chemistry

Teaching Areas:

- FP 4023/6023 Wood Chemistry
- FP 8123 Advanced Lignocellulosic Biomass Chemistry

New Degree Program:

- SBP 3143 Biomass Characteristics and Production
- SBP 4023/6023 Lignocellulosic Biomass Chemistry
- SBP 4133/6133 Biorefinery Processes

Dr. Dragica Jeremic, Assistant Professor
Research Interests:

- Bioproducts deterioration
- Protection of bioproducts using environmentally friendly approaches
- Enzymatic degradation
- Techniques for in-situ characterization of chemical changes in biomass

Teaching Areas:

- FP 4323/6323 Wood Physics

New Degree Program:

- SBP 3113 Biomaterials Physics and Mechanics
- SBP 3123 Biomass to Bioproducts
- SBP 4243/6243 Sustainable Bioproducts
- SBP 4153/6153 Biomass Biological Conversion

Dr. David Jones, Associate Professor, Extension
Research Interests:

- Wood quality and rapid assessment techniques of wood properties

Teaching Areas:

- FP 4013/6013 - Wood Anatomy
- FP 4123/6123 - Lumber Manufacturing

New Degree Program:

- SBP 1103 Introduction to Sustainable Bioproducts
- SBP 1203 Anatomy of Wood and Other Natural Materials

Dr. Mojgan Nejad, Assistant Professor
Research Interests:

- Lignin Modification to Produce Sustainable Polyurethane Resin for Coatings
- Adhesion of Metal Coating to Biocomposites
- Improving Performance of Bio-Based Coating with Nanoparticles
- Process Optimization of Thermal Spray Metal Coating on Wood

Teaching Areas:

- New faculty member – beginning Fall 2014

New Degree Program:

- SBP 3123 Biomass to Bioproducts
- SBP 3143 Biomass Characteristics and Production

- SBP 4113/6113 Adhesives and Biocomposites

Dr. Darrel D. Nicholas, Professor
Research Interests:
- Development of new wood preservatives
- Development of mechanical test methods for evaluating wood preservative efficacy.
- Non-enzymatic decay mechanisms of brown-rot fungi
- Wood dimensional stabilization and weathering

Teaching Areas:
- FP 4213/6213 - Wood Deterioration and Preservation
- FP 8111 Research Seminar

New Degree Program:
- SBP 4213/6213 Deterioration and Preservation of Biomaterials

Dr. R. Dan Seale, Professor
Research Interests:
- Manufacturing economics
- Composite wood products development
- Mechanical Testing of wood products
- Commercialization

Teaching Areas:
- FP 4253/6253 - Quantitative Methods in Forest Products and Furniture
- FP 4353/6353 - Forest Products Marketing

New Degree Program:
- SBP 2123 Materials and Processing in Sustainable Bioproducts
- SBP 4253/6253 Quant methods (computer competency)

Dr. Philip Steele, Emeritus Professor
Research Interests:
- Development of software to analyze manufacturing processes
- Analysis of industrial investments
- Development of automated wood processing systems

Teaching Areas:
- FP 4123/6123 - Lumber Manufacturing

New Degree Program:
- SBP 3143 Biomass Characteristics and Production

Dr. Hui Wan, Associate Professor
Research Interests:
- Bio-based composite products design and development for residential and non-residential building components
- Bio-based composite panel products manufacture, process & quality control, and evaluation
- Bio-based composite resins manufacture and evaluation
- Bio-based composite modification and dimensional stabilization
- Biomaterial-water relations, biomaterial-polymer relations, biomaterial microstructure

Teaching Areas:
- FP 4113/6113 Adhesives and Finishes
- FP 4143/6143 Composite Wood Products

New Degree Program:

- SBP 4113/6113 Adhesives and Biocomposites
- SBP 4144/6144 Biocomposite Application and Manufacturing

Dr. Jilei Zhang, Professor
Research Interests:
- Product engineering and strength design of furniture
- Natural fiber-based polymer composites and wood-based nano-composites
- Non-destructive evaluation of wood and wood-based composites and their structural components
- Synthesis of carbon-based nanoparticles from biomass, property characterization, and applications

Teaching Areas:
- FP 4223/6223 - Furniture Production I
- FP 4233/6233 - Furniture Production II
- FP 4423/6423 - Mechanical Properties of Wood

New Degree Program:
- SBP 3113 Biomaterials Physics and Mechanics
- SBP 4263/6263 Strength Design of Furniture as Green Product

7. Library Holdings & Resources

Current library holdings at Mitchell Memorial Library are:
- 2,557,334 volumes held

The monographic holdings related to the Department of Sustainable Bioproducts are:
A total of 14,654 titles (25890 items) from the following call number ranges:
- 540 title (576 items) in the GE 1-350 call number range
- 480 title (561 items) in the GF 1-900 call number range
- 206 titles (402 items) in the HD9750-HD9769 call number range
- 5614 title (12581 items) in the QD 1-999 call number range
- 1118 title (1733 items) in the QH 540-549.5 call number range
- 4201 title (6216 items) in the QK 1-989 call number range
- 360 title (624 items) in the SD 430-559 call number range
- 405 title (901 items) in the TP 1-156 call number range
- 164 title (196 items) in the TP 200-248 call number range
- 126 title (184 items) in the TP 248.13-248.65 call number range
- 235 title (264 items) in the TP 315-360 call number range
- 150 title (208 items) in the TP 934-978 call number range
- 533 title (871 items) in the TS 800-937 call number range
- 185 title (344 items) in the TS 1080-1268 call number range
- 158 title (179 items) in the TT 180-220 call number range
- 49 title (50 items) in the TT 300-382.8 call number range

The library has access to 96 databases.
Databases important to Sustainable Bioproducts are:
- Agricola
- Biological Abstracts
- CAB Abstracts
- Environment Complete
- GeoRef

- SciFinder
- Scopus

The library has access to 102,046 eJournals.
eJournals related to Sustainable Bioproducts are:

- 1981 journals delivered in aggregated databases and journal packages (online)
- 148 paid subscription journals (print and online)

Existing facilities are currently adequate for classroom and laboratory space. However, due to the location of the Department, some classes will have to be taught on the main campus. Classrooms will be requested from the Registrar's Office for those classes taught during class 'prime time'. The Department of Sustainable Bioproducts is located just off of the main Starkville campus. It is served by the campus shuttle; however, it would be close to impossible for freshman and sophomores to be able to go from this Department to a classroom on the main campus in 10 minutes. So the lower division courses will need to be taught on the main campus in an assigned classroom, or the classes will have to be offered late in the day, after prime time.

8. Student Learning Outcomes and Internal Assessment

The estimate of enrollment for the first six years is:

Year One:	5
Year Two:	12
Year Three:	15
Year Four:	20
Year Five:	20
Year Six:	20
Total:	92

Based on the statistics from the former Department of Forest Products (the forerunner of the Department of Sustainable Bioproducts) program and the number of current jobs available, it is anticipated that 85%-90% of the graduates will find employment, and of these, 80% will find employment in Mississippi.

Based on current job announcements and calls from industrial, commercial, and governmental cooperators, vendors, and other employers, it is estimated that the starting annual salaries for graduates with the B.S. in Sustainable Bioproducts will be in the range of $38,000 to $48,000.

On the next page is the list of Student Outcomes for the B.S. degree in Sustainable Bioproducts. Through the process of Curriculum Mapping, the department's faculty have planned the courses to cumulatively build the core concepts of the program over the student's four-year experience. There are certain outcomes, in particular, a service-learning component that the department intends to add once the program is established and underway.

Listed below are some of the ways the departmental faculty will evaluate the degree program and its effectiveness. If we find that we have not been successful in fulfilling one of the student outcomes, we will modify the program to address this deficiency. No program should be static. All programs should be adapting to new products, technologies and processes, ever changing global and social issues, and employer expectations. As such the faculty envision that the program will continue to evolve so that the students are always prepared to meet the demands of the day.

Evaluation of the program and its effectiveness will be carried out by the following methods:

- Evaluations of student's performances by faculty during classroom and laboratory experiences, including but not limited to written and oral assignments, team-work, participation, commitment.
- Course and instructor evaluations by students.
- Employment statistics
- Starting salaries
- Acceptance into graduate programs
- Employer's evaluations of students
- Exit surveys
- Student portfolios

The program director (with assistance from the College of Forest Resources Academic's Coordinator as well as departmental administrative staff) will be responsible for admission and retention rates, exit surveys, maintaining employment statistics and starting salaries, employer evaluations, and overall program outcome assessment. The department undergraduate committee will be responsible for evaluating student performance, course and instructor performance, and student portfolios.

Student Outcomes for the Sustainable Bioproducts Bachelor of Science Degree

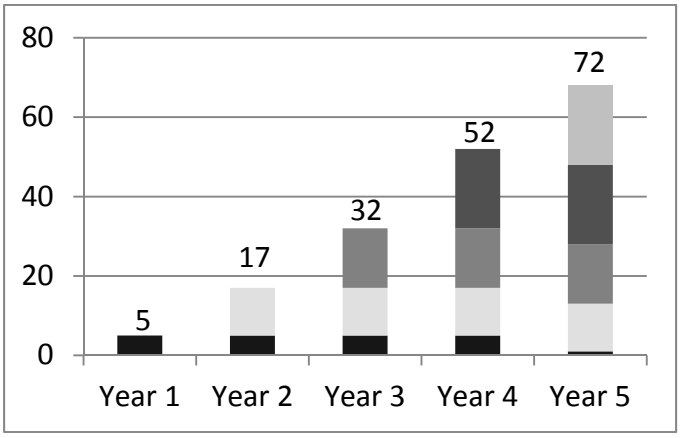
The program must have documented student outcomes that prepare graduates to attain the program educational objectives. There must be a documented and effective process for the periodic review and revision of these student outcomes.

For the baccalaureate degree program in Sustainable Bioproducts, these student outcomes must include, but are not limited to, the following learned capabilities:

1. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined Sustainable Bioproducts activities and problems;
2. an ability to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to problems that require the application of principles and applied procedures or methodologies;
3. a broad education necessary to understand the impact of sustainable bioproduct solutions in a societal and global context;
4. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
5. an ability to function effectively as a member or leader of a team;
6. an ability to identify, analyze, and solve broadly-defined sustainable bioproducts problems;
7. an ability to write and apply written, oral, and graphical communication in both technical and non-technical environments;
8. an ability to critically assess, integrate, and synthesize appropriate literature and technical information, and to draw and communicate rational conclusions;
9. an understanding of the need for and an ability to engage in self-directed continuing professional development;
10. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity; and
11. a commitment to quality, timeliness, and continuous improvement.

9. Number of Graduates

Across the USA, university-level Wood Science and Forest Products programs have evolved. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been embedded in forest products and wood science programs. Now, however, they are front and center. The table below illustrates the enrollment of several similar programs, formerly focused on forest products, throughout the USA. These other departments and programs have developed foci on sustainable bioproducts. Their average enrollment in the 5-7 year time frame is on the order of 45. With aggressive recruitment and advertising, given the natural resources environment in Mississippi, we believe we can achieve our goal of 70-80 students populating the program.



Estimated Cumulative Number of Students Enrolled Each Year

Four are assumed to graduate by Year 5.

University	Revised name of Program or Department	Undergraduate enrollment
Univ of Idaho	Renewable Materials	17
Univ of Maine	Forest Operations, Bioproducts, & Bioenergy option	Data not available
Michigan Tech	School of Forest Resources and Environmental Sci.	Data not available
Univ of Minn.	Dept of Bio-based Products	32
SUNY ESF	Sustainable Construction Mgt & Engineering	85
N. Carolina State	Forest Biomaterials	36
Oregon State	Renewable Materials Program	52
Penn State	Biorenewable Systems Program	20
Univ. of Tenn.	Center for Renewable Carbon	Data not available
Virginia Tech	Sustainable Biomaterials	70

Letters of Support:
A letter of support from the Department of Sustainable Bioproducts curriculum committee is attached in APPENDIX 3. Letters of support from MSU Department Heads are attached in APPENDIX 3.

PROPOSED 4-LETTER ABBREVIATION
SBPP

EFFECTIVE DATE:
Fall semester 2015

APPLICATION FOR A NEW DEGREE PROGRAM:
A copy of the Application for a New Degree Program which has been submitted to the IHL for approval can be found in APPENDIX 4.

APPENDIX 1

Course Catalog Descriptions of Courses Offered in B.S. in Sustainable Bioproducts

SBP 1001 First Year Seminar: One hour lecture. First-year seminars explore a diverse array of topics and provides students with an opportunity to learn about a specific discipline from skilled faculty members.

SBP 1103 Introduction to Sustainable Bioproducts: Three hour lecture. A survey of biomass structure, anatomy, properties and chemistry, and the processes used to manufacture sustainable biomass-based products.

SBP 1203 Anatomy of Wood and Other Natural Materials: Two hours lecture and Three hours laboratory. (Prerequisite: SBP 1103 or consent of instructor). Anatomy of commercial timber species and natural materials used to manufacture bioproducts; elements of botanical microtechnique, fundamentals of microscopy; gross and minute structural characteristics.

SBP 2012 Introduction to Bioproduct Industries: One hour lecture and One hour Laboratory/Field Trip. This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States. (During two weeks of intersession term, class will meet six hours per day.)

SBP 2123 Materials and Processing in Sustainable Bioproducts: Three hours lecture. (Prerequisite: SBP 2012 or consent of instructor). Introduction to processing of sustainable biomaterials including generation of by-products; also methods for product evaluation with American Society of Testing and Materials (ASTM) standards.

SBP 2990 Special Topic in SBP: Variable. Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

SBP 3113 Biomaterial Physics and Mechanics Two hours lecture and Two hours laboratory. (Prerequisite: MA1323 or equivalent). This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses

SBP 3123 Biomass to Bioproducts: Three hours lecture. (Prerequisite: CH 1043 or equivalent). Introduction to chemical/physical properties of forestry and agro crops with overview of products derived from plant materials. Innovative and emerging bioproducts industries are described.

SBP 3143 Biomass Characteristics and Production: Three hours lecture. (Prerequisite: CH 1043, BIO 1134, and MA 1313). Methods of field production and characteristics of biomass utilized for fuels and biochemicals.

SBP 4000 Directed Individual Study: Variable. Hours and credit to be arranged.

SBP 4023/6023 Lignocellulosic Biomass Chemistry: Three hour lecture. (Prerequisites: CH 1043 and CH1053 or equivalent) Chemical composition of lignocellulosic biomass (wood, agricultural residues, and bioenergy crops) including cellulose, hemicelluloses, lignin, and extractives, their structures, isolation, processes and applications.

SBP 4113/6113 Adhesives and Biocomposites: Two hours Lecture. Three hours Laboratory. (Prerequisites: SBP 2123, SBP 3113, SBP 3123, and CH 1053) Theories and practices of adhesives and finishing materials used in the manufacture of biocomposite products and furniture.

SBP 4133/6133 Biorefinery Processes: Three hours Lecture. (Prerequisites: SBP 4023 or consent of instructor) An overview of the different chemical and thermochemical biorefinery processes used to convert biomass into chemicals and fuels.

SBP 4144/6144 Biocomposite Application and Manufacturing: Three hours lecture. Three hours laboratory. (Prerequisite: SBP 2123, SBP 3113, SBP 3123, and SBP 4113/6113 or Consent of instructor). This course evaluates the application of raw bio-materials (wood, non-wood biomaterial and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications

SBP 4153/6153 Biological Conversion of Biomass: Three hours lecture. (Prerequisite: BIO1134 and BIO 1144 or consent of instructor). Introduction to concepts of conversion of biomass by organisms or isolated enzymes to chemicals focusing on breakdown of cellulose, lignin and hemicelluloses and enzyme kinetics.

SBP 4213/6213 Deterioration and Preservation of Biomaterials: Two hours lecture. Three hours laboratory (Prerequisite: SBP 1103 or Consent of instructor). Thermal, biological, and mechanical agents of bioproducts deterioration; biological control; design considerations; preservatives, preservation systems; treatability; preservative effectiveness; standards.

SBP 4243/6243 Sustainable Bioproducts: Three hours lecture. (Prerequisite: SBP 3123 or consent of instructor). Expanding students' knowledge of bioproducts, manufacturing principles and processes according to various industrial fields and insights into new approaches and methods in bioproducts industries.

SBP 4253/6253 Quantitative Methods in Sustainable Bioproducts: Three hour lecture. (Prerequisites: MA1313 and MA1323 or equivalent and SBP 2123) The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables.

SBP 4263/6263 Strength Design of Furniture as Green Products: Two hours lecture and Three hours laboratory. (Prerequisite: SBP 3113 or consent of instructor). General principles of structural analysis of furniture; strength design of members and joints; mechanical properties of environmentally preferable materials; design and analysis computer software; green and sustainable design certifications; and testing standards.

SBP 4313/6313 Bioproducts and the Environment: Three hours Lecture. (Prerequisites: SBP 2012, 2123, and 3123 or consent of instructor). An introduction to environmental topics and laws, environmental impact, and control technologies associated with emissions from diverse sustainable bioproducts industries, including global and national issues.

SBP 4333/6333 Bioproducts and Environmental Biotechnology: Three hours Lecture. (Prerequisites: SBP 2012, 2123, 3123, and 4313/6313 or consent of instructor). Three hours Lecture. Introduction to biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries, including wood preservatives, high organic process water, adhesives, resins and solvents

SBP 4443 Capstone Sustainable Bioproducts: Three hours lecture. (Prerequisites: consent of instructor). Integration of knowledge from courses and current issues involving team projects that explore manufacturing problems or product design, emphasizing LCA, social/global perspectives, and problem solving.

SBP 4450 Undergraduate Research in Sustainable Bioproducts: 1-6 variable laboratory hours. (Prerequisites: Senior standing and consent of instructor). This course is designed to introduce senior level students to the concepts of independent and original research. (Course limited to two offerings).

SBP 4990 Special Topic in SBP: Variable hours. Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

APPENDIX 3

Letters of Support

MISSISSIPPI STATE
UNIVERSITY™

College of Forest Resources
Forest and Wildlife Research Center

September 26, 2014

Dr. Kirk Swortzel
Chair, University Committee on Courses and Curricula
Mailstop 9699
244 Magruder Street
Mississippi State, MS 39762

Dear Dr. Swortzel:

I strongly support the new undergraduate degree program proposed by the Department of Sustainable Bioproducts. This degree program complements our existing undergraduate degree programs in Wildlife, Fisheries and Aquaculture; Forestry; and Natural Resources and Environmental Conservation very well. It is uniquely positioned to increase our college-wide enrollment while simultaneously providing courses that support and augment our existing programs.

The proposed degree program specifically addresses the state-wide employment needs of both the existing forest products industry and developing biofuels and bioproducts industries. The proposed curriculum is the result of considerable thought and research into the skills and expertise these targeted industries require in their employees. The faculty of the Department of Sustainable Bioproducts has built this new degree program from the ground up, developing and/or making substantial modifications to 20 courses to provide its students with exactly those skills. The entire faculty assisted in developing this new program and is fully committed to teaching it, once approved.

This degree program has my strongest support.

Sincerely,

George M. Hopper
Dean

Office of the Dean and Director
Box 9680 | Mississippi State, MS 39762 | (662) 325-2953 | (662) 325-0015 FAX
Department of Forestry • Department of Forest Products • Department of Wildlife, Fisheries and Aquaculture

MISSISSIPPI STATE UNIVERSITY

Department of Biological Sciences
219 Harned Hall
295 Lee Boulevard, P.O. Box GY
Mississippi State, MS 39762
Phone: 662-325-3120
FAX: 662-325-7939

August 19, 2014

To: Dr. Rubin Shmulsky, Professor and Head
Department of Sustainable Bioproducts

From: Nancy A. Reichert, Professor and Department Head
Biological Sciences

Subject: Proposed B.S. degree program in Sustainable Bioproducts

After soliciting guidance from the Department of Biological Science's Undergraduate Committee, I am glad to write a letter of support for the Department of Sustainable Bioproducts' newly proposed B.S. degree program in Sustainable Products. Students will be required to complete two Biological Sciences courses, BIO 1134 (Biology I) and BIO 1144 (Biology II); with the numbers of students projected to be enrolled in this new degree program, teaching these additional students in our core natural sciences courses should not cause an undue burden. In addition, it appears that students can take up to 18 credits of "professional electives" at/above the 3000-level from Biological Sciences and a number of other departments. With the numbers of course options available to students, it appears that we should be able to effectively manage the additional students enrolling our upper-level BIO courses.

This proposed new B.S. degree program does not duplicate any of our departmental degree programs, and appears that it has been designed to provide course/lab expertise in areas that no other major currently covers. I applaud you and the Sustainable Bioproducts faculty for your efforts to provide a seemingly much-needed area of study that should benefit and better-prepare students pursuing careers in natural resources, forest products and related professions.

MISSISSIPPI STATE
UNIVERSITY

Bagley College of Engineering

August 18, 2014

Dear Dr. Shmulsky,

On behalf of the James W. Bagley College of Engineering, and the eight departments within the college, I would like to offer our full support for your proposed degree program in Sustainable Bioproducts. We have examined the proposal and do not see any duplication in proposed courses or the overall program. This is a potential opportunity for greater collaboration with our Chemical Engineering and Agricultural & Biological Engineering departments. In particular, *CHE 4673 – CHE Industrial Microbiology* and *CHE 4683 – Fundamentals of Biofuel Production* are courses that compliment your curriculum and your students might consider these as technical electives.

Good luck with your endeavors and please let me know if we can be of any further assistance.

Sincerely,

James Warnock, Ph.D.,
Interim Associate Dean for Undergraduate Studies

JAMES WORTH BAGLEY
COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY

479-2 Hardy Road • 250 McCain Hall • Post Office Box 9544 • Mississippi State, MS 39762 • www.bagley.msstate.edu

Rubin Shmulsky

From: Usher, John <usher@ise.msstate.edu>
Sent: Thursday, August 07, 2014 8:06 AM
To: Rubin Shmulsky
Subject: Sustainable Bioproducts Undergraduate Curriculum Proposal

Rubin,

The Department of Industrial & Systems Engineering supports the creation of this new BS program in Sustainable Bioproducts at MSU. This program will provide graduates that will be able to uniquely serve in natural resource related fields.

Sincerely,

John

John M. Usher, Ph.D., P.E.
Professor and Head
Department of Industrial & Systems Engineering
Mississippi State University
P.O. Box 9542
260 McCain Bldg.
Miss. State, MS 39762
662-325-7624 (office)
662-325-7618 (fax)

MISSISSIPPI STATE
UNIVERSITY

Department of Plant and Soil Sciences

MEMORANDUM

TO: Dr. Rubin Shmulsky, Head and Professor
Department of Sustainable Bioproducts

FROM: Dr. J. Mike Phillips, Head and Professor
Department of Plant and Soil Sciences

DATE: August 15, 2014

RE: Letter of Support

It is a pleasure for me to inform you that our department supports the proposed Sustainable Bioproducts degree proposal. The proposal appears to complement our program and is consistent with the mission of MSU in producing graduates that will be trained to work in a variety of natural resources and forest products related disciplines.

We want to commend you and your faculty for developing a degree that broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines in a manner such that highly qualified graduates will enter the work force in many vocations associated with the forest products industry.

Please feel free to call on me if I can be of additional assistance in supporting this proposal.

MISSISSIPPI STATE
UNIVERSITY

Department of Geosciences
108 Hilbun Hall
355 Lee Blvd.
P.O. Box 5448
Mississippi State, MS 39762
Phone (662) 325-3915
FAX (662) 325-9423

August 12, 2014

Rubin Shmulsky, Ph.D.
Professor and Department Head
Associate Director, Sustainable Energy Research Center
Department of Sustainable Bioproducts
Franklin Center, Room 203
Box 9820
Mississippi State, MS 39762

Dear. Dr. Shmulsky:

John Rodgers, the Department of Geosciences' Undergraduate Coordinator, and I have reviewed the Sustainable Bioproducts curriculum proposal that is being put forth by the Department of Sustainable Bioproducts. There is no duplication with existing Geosciences curricula and I am happy to see GR courses under the 3000-level General Education list of courses. It is consistent with the mission of MSU and won't cause any undue stress on our department's teaching load. It appears to have strong promise of producing graduates that will be able to work in a variety of natural resources and forest-products related disciplines. Furthermore, I believe that this curriculum will provide an excellent opportunity to students at Mississippi State University. Therefore, I fully support this curriculum proposal. If you have any questions or need further information, please feel free to contact me.

Respectfully,

William H. Cooke III, Ph.D.
Professor and Head
Department of Geosciences

MISSISSIPPI STATE UNIVERSITY
240 Giles Hall 899 Collegeview Street PO Box AQ Mississippi State, MS 39762-5541
Tel: 662.325.2202
Fax: 662.325.8872

COLLEGE OF ARCHITECTURE ART + DESIGN
www.caad.msstate.edu

SCHOOL OF ARCHITECTURE

MEMORANDEM

DATE: 07 August 2014

TO: MSU UCCC Committee

FROM: **Michael A. Berk** AIA | F.L. Crane Professor
Director --- School of Architecture

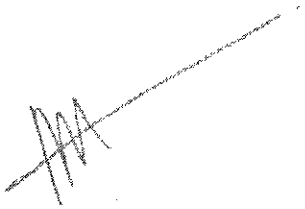
RE: **Support Letter** for the: Bachelor of Science in Sustainable Bioproducts
New Program Proposal

On behalf of the School of Architecture please accept this note as our formal support of the above-noted 'new' degree program in the Department of Sustainable Bioproducts. We do not see any redundancies with our curriculum.

This new degree program will provide excellent opportunities for students (and faculty) in our School as well as across campus. It is a well-balanced and rigorous proposal, and clearly supports and addresses the mission of our university and the needs of our state, region, and nation.

We excited to see the implementation of this degree and look forward to participating and collaboratively contributing to its success.

Please feel free to contact me if you have any further questions.



c:

Prof. Jim West, AIA	Dean -- College of Architecture, Art + Design
Dr. George Hopper	Dean -- College of Forest Resources
Prof. Justin Taylor	Chair -- School of Architecture Curriculum Committee
Dr. Rubin Shmulsky	Department Head - Dept. of Sustainable Bioproducts

MISSISSIPPI STATE
UNIVERSITY

August 8, 2014

Rubin Shmulsky, PhD
Professor and Department Head
Department of Sustainable Bioproducts
Mail Stop 9820
rshmulsky@CFR.MsState.Edu

RE: Undergraduate degree proposal, Department of Sustainable Bioproducts

Dear Rubin,

Mississippi State University has a responsibility to offer education that is both foundational as well as current. Your proposal to initiate a new undergraduate degree program within the Department of Sustainable Bioproducts addresses this responsibility. The program provides the student with a solid core curriculum while also establishing an educational experience that will permit these students to compete effectively for employment within this vocational field.

Valuing and utilizing our natural resources in a renewable sustainable manner is critical and is a cornerstone for the economic health of Mississippi.

I herein fully support your efforts to develop this new undergraduate degree program.

Sincerely,

Kenneth O. Willeford
Professor and Interim-Head
Biochemistry, Molecular Biology, Entomology and Plant Pathology

College of Agriculture & Life Sciences • Agricultural & Forestry Experiment Station • MSU Extension Service
Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology
Biochemistry, Molecular Biology & Plant Pathology Programs: Box 9655 • Mississippi State, MS 39762 USA • (662) 325-2640 • FAX (662) 325-8664
Entomology Program: Box 9775 • Mississippi State, MS 39762 USA • (662) 325-2085 • FAX (662) 325-8837

MISSISSIPPI STATE UNIVERSITY

DEPARTMENT OF INSTRUCTIONAL SYSTEMS AND WORKFORCE DEVELOPMENT
BOX 9730
MISSISSIPPI STATE, MISSISSIPPI 39762-9730
TELEPHONE: 662-325-2281 FAX: 662-325-7599

MEMORANDUM

TO: Dr. Rubin Shmulsky, Professor and Department Head
Department of Sustainable Bioproducts

FROM: Dr. Connie M. Forde Connie M. Forde
Department Head/Professor

SUBJECT: Support of Bachelor's Degree in Sustainable Bioproducts

DATE: August 6, 2014

Dr. John Wyatt, coordinator for the Industrial Technology degree in the Department of Instructional Systems and Workforce Development, and I have reviewed the proposal for the proposed bachelor's degree in Sustainable Bioproducts. We do not see a duplication of TKI course content and are pleased to see the inclusion of TKI electives for students selecting this program.

We support your faculty in this proposal.

MISSISSIPPI STATE
UNIVERSITY

Department of Landscape Architecture
College of Agriculture and Life Sciences
Mississippi State University

Campus Correspondence

August 12, 2014

To: Dr. Kirk Swortzel, Chair
University Committee on Courses and Curricula

From: Sadık C. Artunç, FASLA
Professor and Head
Department of Landscape Architecture

Re: Letter of support for proposed Sustainable Bioproducts Undergraduate Curriculum

Please accept this letter as our department's formal response to the course offering noted above.

The Department of Landscape Architecture has reviewed and is in full support of the proposed undergraduate curriculum in Sustainable Bioproducts.

We believe this proposed degree is consistent with the mission of the University. It appears to have a strong promise of producing graduates that will be able to work in a variety of natural resources and forest products related disciplines. We believe that this program would greatly benefit students and citizens of the State of Mississippi as well as other states within which the University recruits students.

Please feel free to contact me if you have any further questions.

Sincerely,

Sadık C. Artunç, FASLA
Professor and Head

SADIK C. ARTUNÇ, FASLA
Professor& Head
Department of Landscape Architecture
College of Agriculture and Life Sciences
Mississippi State University, MS 39762
Mail Stop 9725
Phone (662) 325-7894 * Fax (662) 325-7893 * E-mail: sa305@msstate.edu

MISSISSIPPI STATE
UNIVERSITY

Department of Wildlife, Fisheries, and Aquaculture
Box 9690
Mississippi State, MS 39762-9690
(662) 325-3133 Fax: (662) 325-4763

Dr. Rubin Shmulsky
Professor and Department Head
Department of Sustainable Bioproducts)
Associate Director, Sustainable Energy Research Center

August 28, 2014

Dr. Shmulsky,

After close review by WFA Undergraduate Coordinator and Curriculum Committee we see no duplication with the new degree program proposed by the Department of Sustainable Bioproducts. This new program appears to be complimentary and consistent with the mission of our University and should not only increase student enrollment, but will provide students with the skills needed to meet their vocational opportunities related to forest- products and related disciplines.

The Department of Wildlife, Fisheries and Aquaculture supports this curriculum program proposal.

Sincerely,

****

Eric D. Dibble, Ph.D.
Dale Arner Distinguished Professor
Interim Department Head & Graduate Coordinator
Wildlife, Fisheries & Aquaculture
325-2378

MISSISSIPPI STATE
UNIVERSITY

Department of Forestry
Box 9681
Mississippi State, MS 39762-9681
662-325-2946 Fax 662-325-8726

October 3, 2014

Dr. Rubin Shmulsky
Mailstop 9820
Mississippi State, MS 39762-9601

Dr. Shmulsky,

The faculty in the Department of Forestry has reviewed the proposal for a new degree program in Sustainable Bioproducts. As a department, we support the proposal. We do have suggestions as follows which we think will strengthen the proposal:

- Provide a stronger justification for the program by demonstrating that a job market exists for any graduates.
- Address the fact that 50 hours of the proposed curriculum are in elective courses. While some flexibility is admirable, too much can be problematic to students attempting to define an employable expertise after graduation.
- Address the consideration that many of the new courses have the same justification.
- Consider the distinct possibility that some courses which could be regarded as essential to your proposed major are missing. Examples include organic chemistry, physics, and calculus.
- Address the lack of substantive discussion regarding the potential overlap between some lower level and upper level courses.
- Provide evidence that no conflict exists between the proposed program and other degrees at MSU or any other state universities in Mississippi.

We believe that addressing these items will be beneficial to your proposal in the approval process. As a department, we wish you success in this endeavor.

Sincerely,

Andrew W. Ezell
Professor and Department Head

pc: Dr. George Hopper
Dr. Greg Bohach
Dr. Kirk Swortzel

APPENDIX 4

Application for a New Degree Program

Appendix 7: Authorization to Plan a New Degree Program
(Submit Appendix 7 in both PDF and Word Document Formats)

Institution: Mississippi State University

Date of Implementation:	Six Year Cost of Implementation:	Per Student Cost of Implementation:
August 2015	Minimal Cost*	Minimal Cost*

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	Six Digit CIP Code:
Sustainable Bioproducts	03.0101

Degree(s) to be Awarded:	Credit Hour Requirements:
Bachelor of Science	124 Hours

List any institutions within the state offering similar programs:

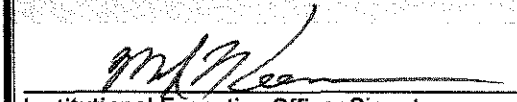
None

Responsible Academic Unit(s):	Institutional Contact:
Department of Sustainable Bioproducts	Dr. Rubin Shmulsky

Number of Students Expected to Enroll in First Six Years:		Number of Graduates Expected in First Six Years:	
Year One	5	Year One	0
Year Two	12	Year Two	0
Year Three	15	Year Three	0
Year Four	20	Year Four	4
Year Five	20	Year Five	10
Year Six	20	Year Six	13
Total	92	Total	27

Program Summary:

This program seeks to provide educational opportunities, at the baccalaureate level, for sustainable bioproducts (such as those derived from timber) and related sectors. The state of Mississippi is blessed with ample forests and forest conversion facilities. The forest products profession has grown and evolved dramatically in the past two decades. The profession maintains its traditional focus on the provision of sustainable and renewable structural products with which the majority of Americans make their homes. At the same time, the profession has evolved to include wood and nonwood hybrid products. These come from agricultural residues, other natural fibers, natural-based adhesives, and nonwood materials. To develop and train contemporary and future sustainable bioproducts professionals, this degree program is sought. Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. By educating students in sustainable bioproducts, it is anticipated that students will be more receptive to entering this vocation. The sustainable bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, agriculture and wood fiberboards, wood polymer composites, and other contemporary engineered products. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make housing and other structures last longer via preservative treatments and better construction techniques. To a large degree this programmatic development maintains forest, lumber, and other related stakeholders at its core. Research and service to these constituent groups within the state remain critical to the department. This new academic offering will be developed to better meet student needs and to better prepare young professionals for work in these and other natural resource related fields – in both traditional jobs as well as in the new jobs of tomorrow. *No additional funds are being requested in support of this program.



Institutional Executive Officer Signature

7-31-14

Date

Institution: Mississippi State University

1. Describe the proposed program and explain how it fits within the mission of the institution.

The proposed program represents the evolution of the forest products industry. This evolution maintains a strong foundation in products, manufacturing, sales, trading, and fundamental aspects of timber derived products, materials, and structures. The forest products industry is an important and vital industry to Mississippi. Timber is recognized as an important commodity. This program also incorporates contemporary new products from biomass, agricultural residues, etc. Non-wood based bioproducts and materials such as structural and non-structural panels made from kenaf, wheat straw, rice hulls, corn stover, etc. have gained market viability in specialty, value-added applications. Additionally, specialty chemicals such as paints and adhesives from natural resources and bio-based energy such as that related to wood pellets, bio-oil, wood alcohol, etc. are increasingly important with respect to sustainable industrial production. Finally, this program incorporates an increasing amount of environmental concerns and interests, social / sustainability consciousness, and multidisciplinary factors. Training professionals to serve in these disciplinary sectors is within the mission of MSU.

2. Provide the information used to determine Mississippi's need for this program. Be specific and provide supporting data (*supporting data must include employment statistics*).

The forest products industry has a major positive impact on the Mississippi economy. In 2010, direct, indirect, and induced effects summed to an industrial output of $10.38 billion with 63,365 associated jobs. These jobs include logging, solid wood products, wood furniture, pulp and paper, non-forestry related, and miscellaneous. Much of this was derived from the State's forests which cover approximately 65% of the State's land area (Source: Economic Contribution of Mississippi's Forest Products Industry Over Time. Ram P. Dahal, Ian A. Munn, James E. Henderson. Proceedings of the Southern Forest Economics Workshop, 2012. Pp 258-266.). Additional impacts of related environmental consultation and conservation as well as ag-residue type products are not included in these statistics. These industries have a present, and forecast future, need for trained professionals.

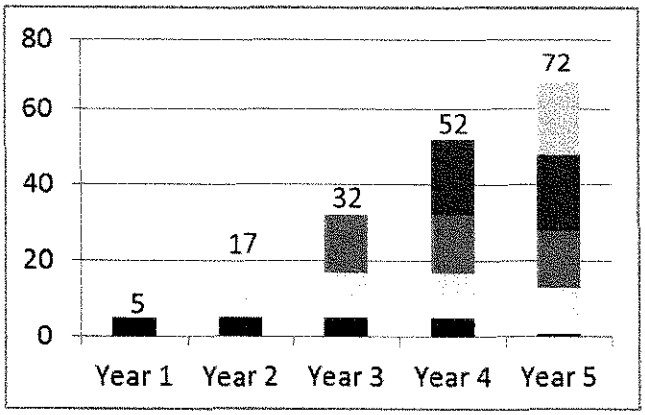
3. Describe the anticipated institutional impact including any research efforts associated with this program.

It is anticipated that this new program will attract new undergraduate students to the institution. As such, it supports overall institutional enrollment growth. The home department, Sustainable Bioproducts, is heavily research-centric. As such, it is anticipated that undergraduates will have ample opportunities to contribute to and participate in cutting-edge contemporary research. These experiences will then translate to enhanced undergraduate educational experiences.

4. Provide the total anticipated budget for the program. Indicate from where the funds will come. Include the anticipated annual cost of operation.

No additional funds are being requested in support of this program. There will be no increase in the operating budget with the acceptance of this degree. There will be no need for additional faculty or space for this new program.

5. Use a chart to show anticipated enrollment for the first five years of the program.



Cumulative Number of StudentsEnrolled Each Year

Four are assumed to graduate by Year 5.

6. Indicate where the proposed program is offered within the state

There are no similar programs within the state. Our program is a materials science-based program which focuses on renewable, sustainable material products. Some of these products are the traditional wood products such as lumber, plywood, oriented strandboard, fiberboard, and furniture, but we are also broadening our knowledge base to include the new innovative bioproducts such as biofuels, biochemicals, packaging, light-weight composites, biomedical products, and pharmaceuticals. All of these different products can be made from sustainable materials. Our research area and department are inherently multidisciplinary. We are not, nor have ever been, a traditional department focused on a single field. We are chemists, biologists, physicists, mechanical strength scientists, product development and manufacturing scientists, coatings scientists, protection and durability scientists, etc. and we are all focused on sustainable material products. In this sense we are unique, and our program that we are proposing in this packet is also unique.

a. Chart similarities and differences in the proposed program and those offered in other institutions

The Chart below is a comparison of subject matter courses required by degree programs that we could find being offered at other state universities and may be considered remotely similar to the program in this proposal. We reviewed every degree program at every state school within the colleges listed below.

General education courses were not compared in this chart; only required subject matter courses were compared. Out of the eight state universities, we found four programs for comparison at the University of Southern Mississippi and two programs for comparison at Jackson State University. Only one of the courses in our program may have overlap in course content with a course being offered in these six other programs. Two programs were compared at Mississippi Valley State University and one program at the University of Mississippi. No course overlaps were found in these programs and the one we propose.

We could find no similar programs at Alcorn State University, Delta State University, and Mississippi University for Women. When we compare to four programs at our own university, Mississippi State University, we have one course in our program that may have overlap in course content with a course being offered in two of the four programs. The other two programs have no course overlaps. Additionally, the IHL Academic Program Inventory Report shows only one program outside and one program inside of our college that has a 03.0101 CIP code and none of these programs overlap with ours.

University and Colleges Compared	Course Overlap to Other Programs X Course Overlap/ Y Courses required for Program
University of Southern Mississippi College of Science and Technology	1/21 ; 1/19 ; 1/25 ; 1/17
Jackson State University College of Science, Engineering and Technology	1/18 ; 1/19
Alcorn State University College of Agriculture, Research, Extension, and Applied Sciences College of Arts and Sciences	No Comparison Programs Were Found
Mississippi Valley State University College of Arts and Sciences College of Professional Studies	0/18 ; 0/20
Delta State University College of Arts and Sciences	No Comparison Programs Were Found
University of Mississippi School of Applied Sciences School of Engineering	0/17
Mississippi University for Women College of Arts and Sciences	No Comparison Programs Were Found
Mississippi State University College of Agriculture & Life Sciences College of Architecture, Art & Design College of Arts & Sciences College of Education College of Engineering College of Forest Resources	1/21 ; 0/19 ; 1/20 ; 0/17

b. Explain anticipated consequences on enrollment in other institutions offering the program, including any ramifications on the Ayers settlement

None. Since this program does not duplicate any other program in the state, it should have no impact on any of the programs offered at any of the universities in the state, including the HBCUs.

7. What is the specific basis for formulating the number of graduates expected in the first six years?

Across the USA, university-level Wood Science and Forest Products programs have evolved. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been embedded in forest products and wood science programs. Now, however, they are front and center. The table below illustrates the enrollment of several similar programs, formerly focused on forest products, throughout the USA. These other departments and programs have developed foci on sustainable bioproducts. Their average enrollment in the 5-7 year time frame is on the order of 45. With aggressive recruitment and advertising, given the natural resources environment in Mississippi, we believe we can achieve our goal of 70-80 students populating the program.

University	Revised name of Program or Department	Undergraduate enrollment
Univ. of Idaho	Renewable Materials	17
Univ. of Maine	Forest Operations, Bioproducts, & Bioenergy option	Data not available
Michigan Tech	School of Forest Resources and Environmental Sci.	Data not available
Univ. of Minn.	Dept of Bio-based Products	32
SUNY ESF	Sustainable Construction Mgt & Engineering	85
N. Carolina State	Forest Biomaterials	36
Oregon State	Renewable Materials Program	52
Penn State	Biorenewable Systems Program	20
Univ. of Tenn.	Center for Renewable Carbon	Data not available
Virginia Tech	Sustainable Biomaterials	70

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Modify** **Date Initiated:** **7/2014** **Effective Date:** **Fall 2015**

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	1103	Wood Technology and Products	(3)

Current Catalog Description:

Three hour lecture. ~~(Prerequisites: None)~~ A survey of wood structures, properties and products, including reconstituted wood products, chemicals from wood and wood preservation

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	1103	Introduction to Sustainable Bioproducts	(3)

New or Modified Catalog Description:

Three hour lecture. ~~(Prerequisites: None)~~ A survey of biomass structure, anatomy, properties and chemistry, and the processes used to manufacture sustainable biomass-based products.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/26/2014
Dean of College or School	9/2c/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 1103 Wood Technology and Products to SBP 1103 Introduction to Sustainable Bioproducts and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Wood Technology and Products

1. Catalog Description

Current Course: Wood Technology and Products FP 1103: Three hour lecture. A survey of wood structures, properties and products, including reconstituted wood products, chemicals from wood and wood preservation

New Course: Introduction to Sustainable Bioproducts SBP 1103: Three hour lecture. A survey of biomass structure, anatomy, properties and chemistry, and the processes used to manufacture sustainable biomass-based products.

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree
c. The change to the course description reflects the departmental changes from a wood focus to bioproducts

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of this course title, course code and course description is necessary to more accurately reflect the new SBP curriculum and the changing industry. The modified course will focus on sustainable bioproducts which includes wood, but is not limited to wood-based products. There is no change in prerequisite.

Learning outcomes:
Upon Completion of this course, students should have an understanding of:

- The overall Sustainable Bioproduct Industry
- What is classified as a Sustainable Bioproduct
- Sustainable Bioproduct raw materials, manufacturing, and utilization
- Bioproduct/Biomaterial professional career opportunities

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number did not change.

c. COURSE TITLE: The course title will be changed to Introduction to Sustainable Bioproducts to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have not changed.

e. PREREQUISITE: The prerequisite for this course have not changed.

f. METHODS/HOURS OF INSTRUCTION: This has not changed. The class will be three hour lecture.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has changed to better reflect the course and the current industry.

> *i*. Current description: A survey of wood structure, anatomy, properties and chemistry, and the processes used to manufacture wood-based products. Lectures will generally follow the order of the textbook and additional information will be added to expand some of the topic areas. Lecture methods will include standard lectures, PowerPoint presentations, videos and demonstrations. A PORTION of the lecture material will be posted online and additional course materials will be made available when necessary. There will also be guest lecturers during the semester to increase the student's exposure to the many different areas which make up the Forest Products Industry.

> *ii*. Modified description: A survey of biomass structure, anatomy, properties and chemistry, and the processes used to manufacture biomass-based products. Lectures will generally follow the order of the textbook and additional information will be added to expand some of the topic areas. Lecture methods will include standard lectures, PowerPoint presentations, videos and demonstrations. A PORTION of the lecture material will be posted online and additional course materials will be made available when necessary. There will also be guest lecturers during the semester to increase the student's exposure to the many different areas which make up the Forest Products Industry.

i. COURSE CONTENT: The course content will be slightly modified to fit the updated and current topics of industry. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

Not Applicable

6. METHOD OF EVALUATION:

Four exams will be given which accounts for 25% of the final grade each. An OPTIONAL comprehensive final will also be given and may be used to replace a lower grade from a previous exam. The final is the ONLY drop grade that is possible. You may NOT wear hats or earphones during the exams. Some old exams are posted online for review.

Students are responsible for all material in the lecture, assigned text and additional provided supplemental material unless otherwise instructed. Exam questions will come from lecture notes, assigned chapters in the text, handouts, slides and tapes shown in class. Grades will be assigned on a 100 point scale with 10% grade brackets.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

OUT OF CLASS WORK:

No work is required outside of studying for exams.

7. ACADEMIC MISCONDUCT:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:

This course would be essential for undergraduate students interested in the bioproducts industry, construction science, bioenergy, forest products, or understanding the sustainable bioproducts in your home.

9. SUPPORT

Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every fall semester beginning 2015.

6. PROPOSED 24-CHARACTER ABBREVIATION:

Intro Sustain Bioproduct

COURSE CONTACT PERSON:

Dr. P. D. Jones
Office: Franklin # 226
Voice mail: 662-325-8454
E-mail: **pdjones@cfr.msstate.edu**

PROPOSAL CONTACT PERSON:

Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

FP 1103 - Wood Technology and Products
Fall 2013
MWF 8:00 – 8:50

Dr. Shane C. Kitchens
Office: Forest Products Laboratory. Building #5, upstairs, Room 5203
Office Phone: (662) 325-6785
E-mail: skitchens@cfr.msstate.edu
Office Hours: Mon. 3-5 & Thurs 3-5 or by appointment

Contacting Dr. Kitchens: You are welcome to come by my office during the posted office hours. If needed, an appointment can be arranged to accommodate individual circumstances. You may also email or call me at the above address or phone number. **If you email, make sure you put FP1103 and the first letter of your first name and your entire last name in the subject line. (example, SJonesFP1103)**

Required Text: Forest Products and Wood Science, 6th Edition; R.Shmulsky & P.D. Jones

Course Description: A survey of wood structure, anatomy, properties and chemistry, and the processes used to manufacture wood-based products. Lectures will generally follow the order of the textbook and additional information will be added to expand some of the topic areas. Lecture methods will include standard lectures, PowerPoint presentations, videos and demonstrations. A PORTION of the lecture material will be posted online and additional course materials will be made available when necessary. There will also be guest lecturers during the semester to increase the student's exposure to the many different areas which make up the Forest Products Industry.

Grading:
You are responsible for all material in the lecture, assigned text and additional provided supplemental material unless otherwise instructed. Exam questions will come from lecture notes, assigned chapters in the text, handouts, slides and tapes shown in class. Grades will be assigned on a 100 point scale with 10% grade brackets. Pop quizzes may be given or announced at any time. Four exams will be given which accounts for 25% of the final grade each. An OPTIONAL comprehensive final will also be given and may be used to replace a lower grade from a previous exam. The final is the ONLY drop grade that is possible. You may NOT wear hats or earphones during the exams. Some old exams are posted online for review.

Makeup exams will be given only for absences excused by Dr. Kitchens in ADVANCE. If you have an emergency the day of the exam, you must call me (325-6785) or email me skitchens@cfr.msstate.edu before the exam is given and provide a written doctor's excuse by the next class period to be considered for an excused absence. If an emergency arises that prevents you from calling or emailing, you must have someone else contact me for you. Do not call me at home!

Excused absences will be given a DIFFERENT exam as a makeup. The time will be arranged between myself and the student and will be proctored. There will be no make-ups for missed pop quizzes. A doctor's excuse **must** be presented within 48 hours of the missed exam before the exam makeup process can begin.

Non-excused absences will result in a zero (0) given for that exam and will be averaged into your final grade.

Extra Points: There MAY be some chance to earn a few extra points. These will be announced in class when they occur and will not be announced in advance. Class participation is encouraged.

Classroom Policies & Conduct:

Attendance is required of all students. You will be marked absent if you are not in your seat when I take roll. **I do take off points for absences**. I will deduct 1 point off your final grade for the first unexcused class you miss and .5 points for additional unexcused classes that are missed. An example would be if you have 5 unexcused absences at the end of the semester, you would have 3 points deducted from your final grade. Consistent tardiness to class counts as an absence.

Please do not talk to your neighbor. No matter how softly you speak, you disturb others. If you didn't hear what I just said, then **ask me**; your neighbor probably didn't hear it either.
This is a tobacco free campus; you may not use tobacco in any form in class.

Use of cell phones, pagers, text messages, etc is prohibited in the classroom "door to door". (MSU Classroom Regulations Policy, AOP 10.08, http://www.msstate.edu/dept/audit/mainindex.html). If I see or hear your cell phone or any other unauthorized electronic device in the classroom, you will be dismissed from class, even during exams.

I take academic honesty very seriously. If you are caught cheating you will receive an 'XF' in the course, and you will be reported to the Dean of Students (MSU Academic Misconduct Policy, AOP 12.07, http://www.msstate.edu/web/security.html).

MSU HONOR CODE:

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal nor will I accept the actions of those that do".

ACADEMIC DISHONESTY POLICY:

The MSU 'Rules Pertaining to the Honor Code' states:

> **Cheating:** Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise. Students completing any examination are prohibited from looking at another student's examination and from using external aids (for example, books, notes, calculators, conversation with others, electronic devices) unless specifically allowed in advance by the instructor.
>
> **Complicity:** Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty. Knowingly allowing another to copy from one's paper during an examination or test.

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://students.msstate.edu/honorcode/.

If a student in this class cheats on an exam [which includes allowing another student to cheat off of your exam], it is an automatic XF in the course and the student(s) will be reported to the MSU Dean of Students Honor Code Council.

Study Suggestions: Take good class notes; read chapter assignments before and after class; start studying several days before test; emphasize parts of chapter covered in the lecture. STUDY OLD TESTS to get an idea of how the questions will be structured. **ASK QUESTIONS,** the only bad question is an unasked question. **ATTEND CLASS,** the only way to learn the material is to attend class**.** You may tape my lectures as a study aid, but you may not give or sell these tapes or the transcripts of them to anyone including other members of the class. You may exchange class notes written during lecture but you may not sell them to anyone.

Week	**Topic**
1	Bioproducts/Biomaterials – Syllabus, course outline, expectations, what is a bioproduct/biomaterial
2	Composition & structure of various bioproducts, hardwoods vs softwoods, basic bioproduct identification
3	How various silvicultural and raw material acquisition techniques affect the quality of final products generated from biomaterials
4	How to dry various bioproducts/biomaterials, bioproduct water relationship, basic mechanical properties, strength and density relationship
5	Durability and protection systems, decay organisms, designing with bioproducts
6	Solid bioproduct manufacturing and quality control
7	Composite biomaterials for structural uses
8	Engineered bioproducts/biomaterials, environmental and economic factors
9	Pulp and paper relationship to bioproducts
10	Biological remediation of soil and water as it relates to the manufacturing and protection of bioproducts
11	Energy and chemical products derived from bioproducts
12	Bioenergy from bioproducts
13	Bioproduct/Biomaterial professional career opportunities
14	Class presentations
15	Finals

I plan to use the *Forest Products and Wood Science – an introduction* textbook for the interim. I will continue to look for other text books that relate to the biomaterials overview.

PROPOSED

Introduction to Sustainable Bioproducts

SBP 1103 (3 credits)

Dept. of Sustainable Bioproducts

Fall 2015

CLASS HOURS:	**MWF 9:00 – 9:50**
CLASS LOCATION:	Thompson Hall Annex Room 220
INSTRUCTOR:	Dr. P. D. Jones Office: Franklin # 226 Voice mail: 662-325-8454 E-mail: pdjones@cfr.msstate.edu Office hours: By appointment

COURSE DESCRIPTION: A survey of biomass structure, anatomy, properties and chemistry, and the processes used to manufacture biomass-based products. Lectures will generally follow the order of the textbook and additional information will be added to expand some of the topic areas. Lecture methods will include standard lectures, PowerPoint presentations, videos and demonstrations. A portion of the lecture material will be posted online and additional course materials will be made available when necessary. There will also be guest lecturers during the semester to increase the student's exposure to the many different areas which make up the Sustainable Bio-Products Industry.

Introduction to Sustainable Bioproducts/ SBP 1103
Syllabus

Course Learning Objectives: Upon Completion of this course, students should have an understanding of:

- The overall Sustainable Bioproduct Industry
- What is classified as a Sustainable Bioproduct
- Sustainable Bioproduct raw materials, manufacturing, and utilization
- Bioproduct/Biomaterial professional career opportunities

Required Text: Forest Products and Wood Science, 6th Edition; R. Shmulsky & P.D. Jones

Methods of Instruction:
This course will be taught primarily through lectures but discussion will be encouraged strongly. Lectures will generally follow the order of the textbook and additional information will be added to expand some of the topic areas. Lecture methods will include standard lectures, PowerPoint presentations, videos and demonstrations. A PORTION of the lecture material will be posted online and additional course materials will be made available when necessary. There will also be guest lecturers during the semester to increase the student's exposure to the many different areas which make up the Sustainable Bioproducts Industry.

Exams:
Four exams will be given which accounts for 25% of the final grade each. An OPTIONAL comprehensive final will also be given and may be used to replace a lower grade from a previous exam. The final is the ONLY drop grade that is possible. You may NOT wear hats or earphones during the exams. Some old exams are posted online for review.

Policy on Missed Assignments:
Makeup exams will be given only for absences excused in ADVANCE. If you have an emergency the day of the exam, notify me before the exam is given and provide a written doctor's excuse by the next class period to be considered for an excused absence. If an emergency arises that prevents you from calling or emailing, you must have someone else contact me for you. Do not call me at home!

Excused absences will be given a DIFFERENT exam as a makeup. The time will be arranged between myself and the student and will be proctored. There will be no make-ups for missed pop quizzes. A doctor's excuse **must** be presented within 48 hours of the missed exam before the exam makeup process can begin.

Non-excused absences will result in a zero (0) given for that exam and will be averaged into your final grade.

Extra Points: There MAY be some chance to earn a few extra points. These will be announced in class when they occur and will not be announced in advance. Class participation is encouraged.

Grading:
You are responsible for all material in the lecture, assigned text and additional provided supplemental material unless otherwise instructed. Exam questions will come from lecture notes, assigned chapters in the text, handouts, slides and tapes shown in class. Grades will be assigned on a 100 point scale with 10% grade brackets. Pop quizzes may be given or announced at any time.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

Attendance is required of all students. You will be marked absent if you are not in your seat when I take roll. **I do take off points for absences**. I will deduct 1 point off your final grade for the first unexcused class you miss and .5 points for additional unexcused classes that are missed with a maximum of 5 points total that can be deducted from final grade due to absences. An example would be if you have 5 unexcused absences at the end of the semester, you would have 3 points deducted from your final grade. Consistent tardiness to class counts as an absence.

Please do not talk to your neighbor. No matter how softly you speak, you disturb others. If you didn't hear what I just said, then **ask me**; your neighbor probably didn't hear it either.
This is a tobacco free campus; you may not use tobacco in any form in class.

Use of cell phones, pagers, text messages, etc is prohibited in the classroom "door to door". (MSU Classroom Regulations Policy, AOP 10.08, http://www.msstate.edu/dept/audit/mainindex.html). If I see or hear your cell phone or any other unauthorized electronic device in the classroom, you will be dismissed from class, even during exams.

Study Suggestions:

Take good class notes; read chapter assignments before and after class; start studying several days before test; emphasize parts of chapter covered in the lecture. STUDY OLD TESTS to get an idea of how the questions will be structured. **ASK QUESTIONS,** the only bad question is an unasked question. **ATTEND CLASS,** the only way to learn the material is to attend class**.** You may tape my lectures as a study aid, but you may not give or sell these tapes or the transcripts of them to anyone including other members of the class. You may exchange class notes written during lecture but you may not sell them to anyone.

Detailed Course Outline: (This course will consist of three 1- hour lectures each week)

Week	Topic
1	Bioproducts/Biomaterials – Syllabus, course outline, expectations, What is a bioproduct/biomaterial (2 Lectures)
2	Composition & structure of various bioproducts Hardwoods vs softwoods (2 Lectures)
3	Basic bioproduct identification How various silvicultural and raw material acquisition techniques affect the quality of final products generated from biomaterials (2 Lectures)
4	How to dry various bioproducts/biomaterials, bioproduct water relationship Basic mechanical properties Strength and density relationship
5	Durability and protection systems Decay organisms Designing with bioproducts

6	Solid bioproduct manufacturing and quality control (3 Lectures)
7	Composite biomaterials for structural uses (3 Lectures)
8	Engineered bioproducts/biomaterials (2 Lectures) Environmental and economic factors
9	Pulp and paper relationship to bioproducts (3 Lectures)
10	Biological remediation of soil and water as it relates to the manufacturing and protection of bioproducts (3 Lectures)
11	Energy and chemical products derived from bioproducts (3 Lectures)
12	Bioenergy from bioproducts (3 Lectures)
13	Bioproduct/Biomaterial professional career opportunities (3 Lectures with guest speakers)
14	Bioproducts and Sustainable World (2 Lectures) Review Bioproduct/Biomaterial Industry (1 Lecture)
15	Finals

Code of behavior:

I take academic honesty very seriously. If you are caught cheating you will receive an 'XF' in the course, and you will be reported to the Dean of Students (MSU Academic Misconduct Policy, AOP 12.07, http://www.msstate.edu/web/security.html).

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:
FOR THOMPSON HALL

Disability statement:
It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Modify **Date Initiated:** 7/2014 **Effective Date:** ~~5/2016~~ Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	3012	Forest Industries	(2)

Current Catalog Description:

40 hours per week for two weeks of laboratory. (Prerequisites: None) Guided introduction to forest products industries and processes

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	2012	Introduction to Bioproduct Industries	(2)

New or Modified Catalog Description:

~~(Prerequisites: None). This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States.~~

One hour lecture and One hour Laboratory/Field Trip. This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States. (During two weeks of intersession term, class will meet six hours per day.)

Approved:	*Date:*
Department Head	8/12/14
Chair, College or School Curriculum Committee	9/08/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY™
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 3012 Forest Industries to SBP 2012 Introduction to Bioproduct Industries and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Forest Industries

1. Catalog Description

Current Course: Forest Industries FP 3012: 40 hours per week for two weeks of laboratory. Guided introduction to forest products industries and processes

New Course: Introduction to Bioproduct Industries SBP 2012. One hour lecture and One hour Laboratory/Field Trip. This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States. (During two weeks of intersession term, class will meet six hours per day.)

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree and allows for a sequence of elective courses within the new curriculum. The reduction from a 3000 to a 2000 class is intended to emphasize that this course should be taken in the first intersession (Maymester) of a student's degree.
c. The change to intersession (Maymester) is necessary for this type of tour-based course
d. The change to the course description reflects the departmental changes from a wood focus to bioproducts

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of this course title, course code, and course description is necessary to more accurately reflect the new SBP curriculum and the changing industry. The move to Intersession (Maymester) is necessary for this type of tour-based course. This course is intended as an introductory course for entering students in the Sustainable Bioproducts curriculum. The reduction from a 3000 to a 2000 class is intended to emphasize that this course should be taken the first Intersession (Maymester) of a student's degree. The industries which use biomass products are diverse and students entering the study of sustainable bioproducts industries need to become acquainted with the equipment and processes that are used. This introduction will help to make subsequent coursework more meaningful, although it is not intended to substitute for more thorough studies of processes and equipment which will be undertaken in more advanced courses.

Learning outcomes:
Upon completion of this course students should have an understanding of:
1: Tree selection for harvesting and machineries used in each step of harvesting operation.
2: Sawmill, wood-treating, pulp & paper operations and lumber grading,
3: How pollutants are remediated in wood preservation and pulp & paper industries.
4: Production of resin based composite products.
5: Manufacturing of office and home furniture

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number change was needed in order to provide a suggested sequence of courses within the new curriculum for students interested in biomaterials. The reduction from a 3000 to a 2000 class is intended to emphasize that this course should be taken the first Intersession (Maymester) of a student's degree.

c. COURSE TITLE: The course title will be changed to Introduction to Bioproduct Industries to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have not changed.

e. PREREQUISITE: The prerequisite for this have not changed.

f. METHODS/HOURS OF INSTRUCTION: The hours of instruction have not changed; however, the course needs to better reflect the actual hours taught in Intersession (Maymester). Intersession (Maymester) did not exist when this course was created. The nature of industry tours fits the Intersession (Maymester) schedule. Thus for two hour class, one hour is considered lecture and one hour is considered laboratory. For a two week course this equals, 1.5 hours per day will be lecture and 4.5 hours per day will be in the field.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery. This is considered a field-style course.

h. COURSE DESCRIPTION: The course description has changed to better reflect the course and the current industry.

> *i*. Current description: This course will focus on the conversion and use of the softwood and hardwood timber resources found in the Southeastern United States. Students will visit various wood-drying facilities, including the lumber, wood-drying, plywood, particle board (and other wood composites) paper, bio-fuel processing, pressure-treating, and the furniture industries. Students will be responsible for reports of each site visit. Due to the nature of this course, an exact listing of clock-hours is not practical.
>
> *ii*. Modified description: This Intersession (Maymester) course will focus on the conversion and use of the softwood and hardwood timber resources and other natural materials found in the Southeastern United States. Students will visit various industries, including lumber manufacturing, plywood, particle board (and other wood composites) paper, bio-fuel processing, pressure-treating, and the furniture industries. Students will be responsible for reports of each site visit.

i. COURSE CONTENT: The course content will be modified slightly to fit the updated and current topics of industry. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

Not Applicable

6. METHOD OF EVALUATION:

There are no exams. All grades will be based on required site visit reports.
Each site visit report will be graded and the average of all (10) reports will be counted as the **final grade.** Students will be provided with a report format that they must follow in writing their reports.
Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

OUT OF CLASS WORK
Site visit reports will be written after the tour outside of class.

7. ACADEMIC MISCONDUCT:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:
This course would be essential for undergraduate students interested in working in a sustainable bioproducts industry. This course is intended as an introductory course for entering students in the Sustainable Bioproducts curriculum. Once the program has been established and recruitment efforts are underway, expected enrollment is about 15 students per year.

9. SUPPORT
Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every Intersession (Maymester) beginning 2016.

6. PROPOSED 24-CHARACTER ABBREVIATION:
Bioproduct Industry

COURSE CONTACT PERSON:
Dr. Hamid Borazjani, Professor
Office: Room 3205 Building 3 Dept. of Sustainable Bioproducts
Office Telephone: 325-3106
Email: hborazjani@cfr.msstate.edu

PROPOSAL CONTACT PERSON:
Dr. Rubin Shmulsky, Ph.D. ,Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

Course Syllabus
FP 3012
Introduction to Forest Products Industries
May 2007

Instructor: Dr. Hamid Borazjani, Professor of Forest Products

Office Hours: Thursday from 2:00 – 4:00 P.M., Room # 3205, Building 3

Phone Number: 325-3106; E-mail address: hborazjani@cfr.msstate.edu

Course Description: This course will focus on the conversion and use of the softwood and hardwood timber resources found in the Southeastern United States. Students will visit various wood-drying facilities, including the lumber, wood-drying, plywood, particle board (and other wood composites) paper, bio-fuel processing, pressure-treating, and the furniture industries. Students will be responsible for reports of each site visit. Due to the nature of this course, an exact listing of clock-hours is not practical.

Grading: Each site visit report will be graded and the average of all (10) reports will be counted as final grade.

Grading Scale:

90 – 100 = A
80 – 90 = B
70 – 80 = C
60 - 70 = D
Below 60 = F

The Appropriate Information: Students will be provided with report format that they have to follow writing their reports.

ACADEMIC HONESTY: All occurrences of academic misconduct will be dealt with in accordance to guidelines and procedures outlined in the Academic Misconduct Policy which can be accessed on the web at: http://www.msstate.edu/dept/avdit/1207.

PROPOSED

Introduction to Bioproduct Industries

SBP 2012 (2 credits)

Intersession

Dept. of Sustainable Bioproducts




CLASS HOURS: TBA

CLASS LOCATION: Franklin Room 116

INSTRUCTOR:

Dr. Hamid Borazjani
Office: Room 3205 Building 3 Dept. of Sustainable Bioproducts
Office Telephone: 325-3106
Email: hborazjani@cfr.msstate.edu
Office hours: Thursday from 2:00 – 4:00 P.M., Room # 3205, Building 3

COURSE DESCRIPTION: This Intersession (Maymester) course will focus on the conversion and use of the softwood and hardwood timber resources and other natural materials found in the Southeastern United States. Students will visit various industries, including lumber manufacturing, plywood, particle board (and other wood composites) paper, bio-fuel processing, pressure-treating, and the furniture industries. Students will be responsible for reports of each site visit. Class will meet approximately 1.5 hours lecture and 4.5 hours field trip per day.

Introduction to Bioproduct Industries/ SBP 2012
Syllabus

Course Learning Objectives: Upon completion of this course students should have an understanding of:

1: Tree selection for harvesting and machineries used in each step of harvesting operation.
2: Sawmill, wood-treating, pulp & paper operations and lumber grading,
3: How pollutants are remediated in wood preservation and pulp & paper industries.
4: Production of resin based wood products.
5: Manufacturing of office and home furniture

Required Text: None

Methods of Instruction: Face to face and on-site**.** Students will meet during the two-week period for both lectures and field trips to visit industry sites. There will be an in-lecture discussion before and/or after the field trips depending upon the length of each visit. Class will meet approximately 1.5 hours lecture and 4.5 hours field trip per day.

Exams: There are no exams. All grades will be based on required site visit reports.

Policy on Missed Assignments: Five percent will be deducted from total grade for each missed assignment.

Grading: Each site visit report will be graded and the average of all (10) reports will be counted as the **final grade.** Students will be provided with a report format that they must follow in writing their reports.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

The MSU 'Rules Pertaining to the Honor Code' states:
"Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it is sufficient grounds to initiate an academic dishonesty case."
http://students.msstate.edu/honorcode/

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://students.msstate.edu/honorcode/.

If a student in this class plagiarizes or copies another student on the trip reports, it is an automatic ZERO on that assignment and the student will be reported to the MSU Dean of Students Honor Code Council.

Detailed Course Outline:
This course will consist of 1.5 hour of lecture and 4.5 hour of field trip each day for 2 weeks.

DAY	Topic
1	Tour of Weyerhaeuser pulp and paper plant in Columbus, MS
2	Tour of Batesville casket in Batesville, MS
3	Tour of harvesting operation in Oktibbeha County, MS
4	Tour of Penick composting operation in Macon, MS
5	Tour of Norbord OSB plant in Gun Town, MS
6	Tour of Franklin Furniture in Houston, MS
7	Tour of Tri-State Lumber company in Fulton, MS
8	Tour of Quality Plywood in Waynesboro, MS
9	Tour of Masonite Corporation in Laurel, MS
10	Tour of Weyerhaeuser sawmill operation in Bruce, MS

Code of behavior:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:
In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex.

Disability statement:
It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Modify** **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2017~~ Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4023/6023	Wood Chemistry	(3)

Current Catalog Description:

Three hour lecture. (Prerequisites: CH 1053 and CH1223) Introduction to the distribution, chemical structure, reactions, and uses of the chemical components of wood including cellulose, hemicellulose, lignin, and extractives

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4023/6023	Lignocellulosic Biomass Chemistry	(3)

New or Modified Catalog Description:

Three hour lecture. (Prerequisites: CH 1043 and CH1053 or equivalent) Chemical composition of lignocellulosic biomass (wood, agricultural residues, and bioenergy crops) including cellulose, hemicelluloses, lignin, and extractives, their structures, isolation, processes and applications

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 4023/6023 Wood Chemistry to SBP 4023/6023 Lignocellulosic Biomass Chemistry and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Wood Chemistry

1. Catalog Description

Current Course: Wood Chemistry FP 4023/6023: Three hour lecture. (Prerequisites: CH 1053 and CH 1223) Introduction to the distribution, chemical structure, reactions, and uses of the chemical components of wood including cellulose, hemicellulose, lignin, and extractives

New Course: Lignocellulosic Biomass Chemistry SBP 4023/6023: Three hour lecture. (Prerequisites: CH 1043 and CH1053 or equivalent) Chemical composition of lignocellulosic biomass (wood, agricultural residues, and bioenergy crops) including cellulose, hemicelluloses, lignin, and extractives, their structures, isolation, processes and applications

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree
c. The change to the course description reflects the departmental changes from a wood focus to bioproducts
d. The prerequisite modification adds ' or equivalent' and removes advanced chemistry courses

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of this course title, course code and course description is necessary to more accurately reflect the new SBP curriculum and the changing industry. The modified course will focus on the chemistry of major lignocellulosic biomass such as agricultural residues in addition to wood. The modified course will also include giving additional points to the undergraduate students for their participation in the class. The prerequisite change added 'or equivalent' to accommodate requirements for students who took higher levels of chemistry.

Learning outcomes:
Upon completion of this course, students will have an understanding of:

1. The basic knowledge of carbohydrate chemistry,
2. The chemistry of major lignocellulosic biomass components such as cellulose, hemicelluloses, lignin and extractives,
3. Methods and tools for lignocellulosic biomass chemical analysis,
4. The chemistry of pulping and bleaching processes,
5. Identification of the different chemical components and products obtained from biomass.
6. Improved writing and presentation skills for the graduate students

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number did not change.

c. COURSE TITLE: The course title will be changed to Lignocellulosic Biomass Chemistry to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have not changed.

e. PREREQUISITE: The prerequisite for this course have changed to reflect the new degree requirements. Addition of 'or equivalent' allows students who have taken higher levels of chemistry to meet the requirements.

f. METHODS/HOURS OF INSTRUCTION: This has not changed. The class will be three hour lecture.

g. METHOD OF DELIVERY: There is no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has changed to better reflect the course and the current industry.

i. Current description: Introduction to the distribution, chemical structure, reactions, and uses of the chemical components of wood including cellulose, hemicellulose, lignin, and extractives

ii. Modified description: This course will give an introduction to major chemical composition of lignocellulosic biomass such as wood, agricultural residues, and dedicated bioenergy crops. The material covers the distribution of biomass components (cellulose, hemicelluloses, lignin, and extractives), their structures, isolation processes and applications.

i. COURSE CONTENT: The course content will be modified to fit the updated and current topics of industry. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

The graduate students will be asked to write a term paper about specified topic related to biomass chemistry. The topic of the term paper will be determined by the instructor and agreed by the student. Every graduate student will be also asked to present the term paper topic in front of the class for discussion. Term papers will be presented at the end of the semester during the class time. Both writing and presentation assignments (65% writing and 35% presentation) will comprise in total 15% of the final grade.

6. METHOD OF EVALUATION:

Grading:	Undergraduate	Graduate
3 Exams	65	65
Attendance and class participation	5	0
Emerging Topic Presentations	0	15
Final Comprehensive Exam	30	30
Total points	100	110

Final grades will be assigned as follows:	Undergraduate	Graduate
A	90 - 100	100 - 110
B	80 - 89	90 - 99
C	70 - 79	80 - 89
D	60 - 69	70 - 79
F	below 60	below 70

OUT OF CLASS WORK:

Graduate students will be asked to write a term paper which will be done outside of class.

7. ACADEMIC MISCONDUCT:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:
This course would be essential for undergraduate and graduate students interested in biomass chemistry particularly relating to bioenergy, biofuels, and conversion of biomass into bioproducts.

9. SUPPORT
Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every other Spring semester beginning 2017.

6. PROPOSED 24-CHARACTER ABBREVIATION:
Lignocell Biomass Chem

COURSE CONTACT PERSON:
Dr. El Barbary Hassan
Assistant Professor
Office: 3110B
Phone: 662-325-8344
Email: emhassan@cfr.msstate.edu

PROPOSAL CONTACT PERSON:
Dr. Rubin Shmulsky, Ph.D. ,Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

Wood Chemistry
FP 4023/6023
Spring 2013

INSTRUCTOR

Name:	Dr. El Barbary Hassan
Office:	3110B
Phone:	662-325-8344
E-mail:	emhassan@cfr.msstate.edu
Office hours:	11:00 a.m.-12:00 Noon TRF
	Other office hours by appointment

COURSE INFORMATION

Course Title:	Wood Chemistry
Course No.:	FP 4023/6023
Lecture:	Tuesday &Thursday 9:30-10:45 a.m.
Location:	112 Franklin Center

COURSE DISCRIPTION

- Give introduction to the distribution, chemical structure, reactions, and uses of the chemical compounds of wood including cellulose, hemicelluloses, lignin, and extractives.

PREEQUISITIES

- CH 1053 and CH 1051 or CH1223 and CH1221

RECOMMENDED TEXTBOOKS

1. ***Wood Chemistry, Fundamentals and Applications, 2nd Edition. Edited by Eero Sjostrom.***

EVALUATION

Final percentage will be determined out of 100 points; the following table will be used to assign the final grade:

Final Average	**90-100**	**80-89**	**70-79**	**60-69**	**<60**
Final Grade	**A**	**B**	**C**	**D**	**F**

DETERMINATION OF GRADES

Undergraduate/Graduate course (FP 4023/6023)	
3 Regular Exams	60%
Presentation	15%
Final Exam.	25%

PRESENTATION

Every student will be allowed to select a topic related to wood chemistry. The student will give a **15-minute** PowerPoint presentation during a class period before the final exam about the selected topic. Also, the student can select one topic related to his/her graduate research project if the topic related to wood chemistry. Some examples for wood chemistry topics are:

- Chemicals and other products from wood
- Wood Pretreatment
- Wood pyrolysis
- Wood liquefaction
- Wood gasification
- Wood hydrolysis
- Other wood chemistry related topics

The process: In consultation with instructor the literature will be selected.

ATTENDANCE POLYCY

Roll will be taken in every class meeting. Full participation in classes is required for all students. If you need to miss a lecture due to illness or an emergency, you must contact the instructor prior to the class. If you cannot make it to class, you need to make provision for all class material you missed.

MAKEUP AND MISSED EXAMS

Make-up exams will only be given for students who have a valid written excuse. Unexcused absence cannot be made up and will result in a "0" for any missed exam including the final. If you miss the final exam and have a valid written excuse, an average of the 4 regular exams, the homework grade, and the project report and presentation will be assigned as the grade for the final exam. You will get a "0" for the final exam due to unexcused absence.

For an excused absence to pass, authentic documentation is required which specifies the dates absent, and which is signed clearly and legibly by an authorized person.

MSU HONOR CODE

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

> ***"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."***
>
> Persons found violating the honor code on exams will be given a zero for that exam and will be reported to the University's Honor Code Council Office. Please read MSU's official policy regarding the honor code (12.07) at http://www.honorcode.msstate.edu/

COURSE OBJECTIVES

Upon successful completion of the course, the students will be able to:

- Understand the basic knowledge of carbohydrate chemistry.
- Understand the chemistry of major wood components such as cellulose, hemicelluloses, lignin and extractives.
- Understand the chemistry of the major pulping and bleaching processes.
- Isolate and identify the different chemical components and products obtained from wood.

COURSE OUTLINE AND PRPOSED SCHEDULE

ALL information is tentative and subject to revision.

LECTURE		TOPIC
No.	Date	
1	01/08	Introduction to the course
2	01/10	Review of basic organic chemistry (I)
3	01/15	Review of basic organic and stereochemistry (II)
4	01/17	Structure and chemical composition of wood
5	01/22	Introduction to carbohydrate chemistry
6	01/24	Cyclic structure of carbohydrates
7	01/29	Monosaccharide derivatives & carbohydrate reactions
8	01/31	Di-and polysaccharides and cellulose
9	02/05	Cellulose structure and bonding
	02/07	**Exam I**
10	02/12	Hemicelluloses
11	02/14	Lignin (I)
12	02/19	Lignin (II)
13	02/21	Wood extractives (I)
14	02/26	Wood extractives (II)
15	02/28	Wood extractives (III)
16	03/05	Bark
17	03/07	Wood pulping
	03/12	**Spring break (No class)**
	03/14	**Spring break (No class)**
	03/19	**Exam II**
18	03/21	Pulp bleaching
19	03/26	Separation and analytical methods of wood components (I)
20	03/28	Separation and analytical methods of wood components (II)
21	04/02	Separation and analytical methods of wood components (III)
22	04/04	Wood chemicals and products (I)- carbohydrates
23	04/09	Wood chemicals and products(II)- lignin and extractives
	04/11	**Exam III**
24	**04/16**	Poster Presentations
25	04/18	Poster Presentations
26	04/23	Course Review/Break
	04/30	**FINAL EXAM (8:00 -11:00 am)**

PROPOSED

Lignocellulosic Biomass Chemistry

SPRING 2017

SBP 4023/6023 (3 credits)

Dept. of Sustainable Bioproducts

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. El Barbary Hassan
Office: 3110B
Phone: 662-325-8344
Email: emhassan@cfr.msstate.edu
Office Hours: TBD

COURSE DESCRIPTION: This course will give an introduction to major chemical composition of lignocellulosic biomass such as wood, agricultural residues, and dedicated bioenergy crops. The material covers the distribution of biomass components (cellulose, hemicelluloses, lignin, and extractives), their structures, isolation processes and applications.

Lignocellulosic Biomass Chemistry (SBP 4023/6023)
Syllabus

Upon completion of this course, students will have an understanding of:

1. The basic knowledge of carbohydrate chemistry,
2. The chemistry of major lignocellulosic biomass components such as cellulose, hemicelluloses, lignin and extractives,
3. Methods and tools for lignocellulosic biomass chemical analysis,
4. The chemistry of pulping and bleaching processes,
5. Identification of the different chemical components and products obtained from biomass.
6. Improved writing and presentation skills for the graduate students

Required Text: Wood Chemistry, Fundamentals and Applications, 2nd Edition, by Eero Sjostrom, Elsevier Science, 1993.

Prerequisites: CH1043 and CH1053 or equivalent

Methods of Instruction: Three hours lecture, and term paper writing and presentation

Exams: Three exams and final comprehensive exam, all exams will be mainly short answer questions.

Policy on Missed Assignments: Make-up exams will only be given for students who have a valid written excuse. Unexcused exam absences cannot be made up and will result in a "0" for any missed exam including the final. If you miss the final exam and have a valid written excuse, an average of the 3 regular exams will be assigned as the grade for the final exam. You will get a "0" for the final exam due to unexcused absence.
For an excused absence, authentic documentation is required which specifies the dates absent, and which is signed clearly and legibly by an authorized person

Graduate Student Requirements:
The graduate students will be asked to write a term paper about specified topic related to biomass chemistry. The topic of the term paper will be determined by the instructor and agreed by the student. Every graduate student will be also asked to present the term paper topic in front of the class for discussion. Term papers will be presented at the end of the semester during the class time. Both writing and presentation assignments (65% writing and 35% presentation) will comprise in total 15% of the final grade.

Grading:

	Undergraduate	Graduate
3 Exams	65	65
Attendance and class participation	5	0
Emerging Presentations	0	15
Final Comprehensive Exam	30	30
Total points	100	110

Final grades will be assigned as follows:

	Undergraduate	Graduate
A	90 - 100	100 - 110
B	80 - 89	90 - 99
C	70 - 79	80 - 89
D	60 - 69	70 - 79
F	below 60	below 70

Classroom Policies & Conduct:

Roll will be taken in every class meeting. Full participation in classes is required for all students. If you need to miss a lecture due to illness or an emergency, you must contact the instructor prior to the class. If you cannot make it to class, you need to make provision for all class material you missed.

Detailed Course Outline: (This course will meet on T and TH for a total of 3 lecture hours a week)

Week	Topic
1	Introduction to the course Review of basic organic chemistry (I)
2	Review of basic organic and stereochemistry (II) Structure and chemical composition of wood
3	Introduction to carbohydrate chemistry Cyclic structure of carbohydrates
4	Monosaccharide derivatives & carbohydrate reactions Di-and polysaccharides and cellulose
5	Cellulose structure and bonding Exam # I
6	Hemicelluloses Lignin (I)
7	Lignin (II) Wood extractives (I)
8	Wood extractives (II) Wood extractives (III)
9	Bark Wood pulping
10	Exam # II Pulp bleaching
11	Separation and analytical methods of wood components (I) Separation and analytical methods of wood components (II)
12	Separation and analytical methods of wood components (III) Wood chemicals and products (I)- carbohydrates
13	Wood chemicals and products(II)- lignin and extractives Exam # III
14	Emerging Presentation
15	Finals

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Modify** **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4113/6113	Adhesives and Finishes	(3)

Current Catalog Description:

Two hours lecture. Three hours laboratory. (Prerequisite: CH1053, FP 1103, or Consent of instructor). Theory and technology of adhesion; adhesive types, application equipment; fundamentals of coating technology; wood finishes; finishing systems; evaluation of glued, finished products; market volumes.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4113/6113	Adhesives and Biocomposites	(3)

New or Modified Catalog Description:

Two hours Lecture. Three hours Laboratory. (Prerequisites: SBP 2123, SBP 3113, SBP 3123, ~~CH 1053~~ and CH 1053) Theories and practices of adhesives and finishing materials used in the manufacture of biocomposite products and furniture

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY™
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course Adhesives and Finishes FP 4113/6113 to Adhesives and Biocomposites SBP 4113/6113 and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Adhesives and Finishes

1. Catalog Description

Current Course: Adhesives and Finishes FP 4113/6113: Two hours lecture. Three hours laboratory. (Prerequisite: CH1053, FP 1103, or Consent of instructor). Theory and technology of adhesion; adhesive types, application equipment; fundamentals of coating technology; wood finishes; finishing systems; evaluation of glued, finished products; market volumes.

New Course: Adhesives and Biocomposites SBP 4113/6113: Two hours Lecture. Three hours Laboratory. (Prerequisites: SBP 2123, SBP 3113, SBP 3123, and CH 1053) Theories and practices of adhesives and finishing materials used in the manufacture of biocomposite products and furniture.

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree
c. The change to the course description reflects the departmental changes from a wood focus to bioproducts
d. The prerequisite addition of the Sustainable Bioproducts core courses

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of this course title, course code and course description is necessary to more accurately reflect the new SBP curriculum and the changing industry. The area of composite or engineered bio-products is the fastest growing and evolving area in our major. From resource view point, the depletion of high quality wood has forced people to use low quality wood and other agro-materials. Global warming has accelerated tree growth and tree death, which has resulted in a global-wide wood strength decrease, requiring biocomposite technology to address this issue. The general trend in material production area is refining any process to make biocomposite products. To make composite products, one needs to know and understand adhesives and resins. The prerequisites of the core SBP courses provide the needed basic background knowledge on the different raw materials, chemistry, processing, mechanics and bioproducts that are covered in this advanced course.

Learning outcomes:
Upon completion of this course, students will have an understanding of:
1. Different resin technologies for biocomposite production
2. Different resin technologies for coating
3. Different resin evaluation technologies
4. UF and PF resin manufacturing technologies

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number did not change.

c. COURSE TITLE: The course title will be changed to Adhesives and Biocomposites to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have not changed.

e. PREREQUISITE: The prerequisite for this course will be modified to include SBP 2123, SBP 3113, and SBP 3123. The old prerequisite of CH1053 will remain. These changes are needed to provide the student with the basic background knowledge on the different raw materials, chemistry, processing, mechanics and bioproducts that are covered in this advanced course.

f. METHODS/HOURS OF INSTRUCTION: The class will be a two hour lecture and three hour laboratory class.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has changed to better reflect the course and the current industry.

i. Current description: Theories and practices of wood adhesives and finishing materials used in the manufacture of wood composite products and furniture.

ii. Modified description: This course is designed to introduce students to the different resin concepts, resin manufacturing and quality evaluation associated with various different products. These products covered glulam, plywood, particleboard, oriented strand board and fiberboard. Also discussed are polymers and their products for coating and finishing.

i. COURSE CONTENT: The course content will be modified to fit the updated and current topics of industry. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

Graduate student requirements have changed from a term paper to a presentation. Graduate students are required to give a presentation either on research conducted by students or a topic approved in conjunction with their major professor.

6. METHOD OF EVALUATION:

Exams are composed of a midterm and final, along with quizzes, which are closed book style.

<u>For Undergraduate students:</u>

Participation	5%
Laboratory work & reports	20%
Quizzes	20%
Midterm Exam	20%
Final-exam	35%

<u>For Graduate Students:</u>

Graduate students are graded with exams, quizzes and project report:

Participation	5%
Laboratory work & reports	20%
Quizzes	20%
Graduate presentation (discussing with major professor)	15%
Midterm Exam	20%
Final-exam	20%

Final percentage will be determined out of 100 points, and grades will be assigned as follows:

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

OUT OF CLASS WORK

a. Laboratory Reports: Assigned after laboratories and due the next lecture.

b. Graduate Student Presentations: Presentations will be given during class but students must prepare out of class.

7. ACADEMIC MISCONDUCT:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:

This course would be essential for undergraduate and graduate students interested in polymer chemistry, composite wood products, material science, sustainable bioproducts, and related industries. In particular, this course is directed toward educating and developing a high quality work force for the biocomposite industries.

9. SUPPORT

Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every other Fall semester beginning 2016.

6. PROPOSED 24-CHARACTER ABBREVIATION:
Adhesives Biocomposites

COURSE CONTACT PERSON:

Dr. Hui Wan
Associate Professor
Department of Sustainable Bioproducts
hwan@cfr.msstate.edu
(662) 325-0214 Office

PROPOSAL CONTACT PERSON:

Dr. Rubin Shmulsky, Ph.D. ,Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

SYLLABUS - FALL 2011 FP 6113
ADHESIVES AND FINISHES FOR WOOD

LECTURE:	Franklin 112:	Tue & Th:	9:30 - 10:20 AM
LABORATORY:	FPL Bldg 2:	Tue:	1:00 - 3:30 PM

Course Description:

Course Contents: Theories and practices of wood adhesives and finishing materials used in the manufacture of wood composite products and furniture.

Grading Scale and Scheme:

90 - 100 % (A) 80 - 89 % (B) 70 - 79 % (C) 60 - 69 % (D)

Three exams (28 points each):	84 points
Laboratory exercises and problems:	16 points
Total	100 points

Term paper:

One term paper is required for students taking the course at the graduate level. The term paper will be graded as A (15 points) or B (10 points) and the grade will be added to the test and lab score and prorated to obtain the final score. A typed paper of 15 pages or longer at the end of the semester before the dead days: choose a topic of your interest early in the semester and discuss with instructor on the plan. The following are the suggested term paper topics.

* Current PF resin OSB/plywood adhesives technology - status and limitation.
* Current UF resin wood adhesives technology - status and limitations.
* Formaldehyde emission problem, counter-measures and testing for UF resin-bonded wood composites.
* Status and recent trends of wood finishing methods used in manufacturing of wood furniture.
* Laminated beam, I-Beam, OS Lumber, and other specialty engineered wood composites.
* Current status and trends in the wood adhesives industry in North America.
* Any other topic agreed on with instructor.

Textbook and references:

Lecture notes and reprints distributed are the starting points. Additional information will be needed from the following books in the FL library or instructor's office:

(a) Wood adhesives. Volume 1 and 2. A. Pizzi 1991.
(b) Technology of wood bonding. Alan Marra. 1992.
(c) Wood Handbook. US Forest Service. 1999.

(d) Organic polymer chemistry. A. J. Sounders 1988.
(e) Paint and surface coatings. R. Lambourne 1988.
(f) Finishes for exterior wood. FPS. Williams, Knaebe & Feist 1996.
(g) Interior wood finishing - FPS. Industrial use guide. Tichy 1997.

Attendance and reading assignment:

Attendance is required for class and laboratory periods. There will be some reading assignments to present orally in class and the results used for upgrading exam grades. A test missed will be given the class minimum score when class and lab attendance are satisfactory unless an arrangement is made before the test.

Due dates of lab reports: will be noticed during lab sessions.

Office hours of instructor: Any time during office hours.

Class and Lab Schedule

8/18	Th	Introduction	Course contents and laboratory tour
8/23	T	Lecture 1	Organic materials, polymers, wood, and wood adhesives
8/25	Th	Lecture 2	Principles of polymer chemistry for wood adhesives
8/30	T	Lab	Lectures on basics of lab experiments
8/30	T	Lecture 3	Thermosetting/thermoplastic polymer chemistry principles
9/01	Th	Lecture 4	Thermosetting and thermoplastic bonding of wood
9/06	T	Lab #1	Experiments with polymers and adhesives
9/06	T	Lecture 5	Urea-formaldehyde and MUF wood adhesive resins I
9/08	Th	Lecture 6	Urea-formaldehyde and MUF wood adhesive resins II
9/13	T	Lab #2	Preparation of UF resins
9/13	T	Lecture 7	Particleboard and hardwood plywood bonding with UF resins
9/15	Th		Game day – No class
9/20	T	Lab #3	Preparation of OSB binder PF resins
9/20	T	Lecture 8	Phenol-formaldehyde wood adhesive resins I
9/22	Th	Lecture 9	Phenol-formaldehyde wood adhesive resins II
9/27	T	Lab #4	Testing of UF and PF resins
9/27	T	Exam #1	Coverage: 8/16 - 9/27
9/29	Th	Lecture 10	PRF and tannin-formaldehyde resin adhesives
10/04	T	Lab #5	Testing of UF and PF resins and PRF
10/04	T	Lecture 11	Softwood plywood adhesives and manufacturing technology

10/06	Th	Lecture 12/13	Isocyanate resin adhesives and bonding of OSB
10/11	T	Lab #6	Plywood preparation and testing
10/11	T	Lecture 14	Polyvinyl acetate emulsion and other specialty wood adhesives
10/13	Th	Lecture 15	Hot-melt wood adhesives
10/18	T	Lecture 16	Casein, soybean flour, blood, and lignin as wood adhesives
10/20	Th	Lecture 17/18	Theory of adhesive bonding for wood substrates I and II
10/25	T	Lab #7	Plywood preparation and testing
10/25	T	Lecture 19	Trouble shooting for PVAc wood adhesive bonding
10/27	Th	Lecture 20	Evaluation methods for wood adhesive bonds
11/01	T	Lab #8	Tour of GP Resin Plant, Taylorsville
11/01	T	Lecture 21	Current US wood adhesives industry parameters (Guest Lecture)
11/03	Th	Exam #2	Coverage 9/29 - 11/01
11/08	T	Lab #9	Testing of water barrier paints testing
11/08	T	Lecture 22	Introduction to coatings technology I
11/10	Th	Lecture 23	Introduction to coatings technology II
11/15	T	Lab #10	Testing of water barrier paints for OSB thickness swell
11/15	T	Lecture 24	Wood coating formulation polymer resins
11/17	Th	Lecture 25	Industrial wood finishing practices
11/22	T	Fall Break	
11/22	T	Fall Break	
11/24	Th	Fall Break	
11/29	T	Lab #11	Industrial finishing methods for wood (Lecture 26)
11/29	T	Lecture 26	Finishes for interior/exterior use wood substrates
12/01	Th	Exam #3	Coverage: 11/08- 11/29.

****

PROPOSED

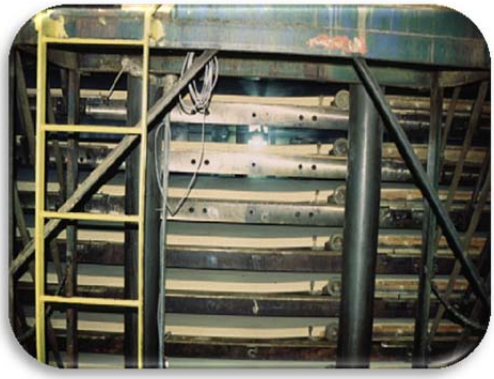
ADHESIVES AND BIOCOMPOSITES

FALL 2017

SBP 4113/6113 (3 credits)

Dept. of Sustainable Bioproducts






CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Hui Wan
Office: 222 Franklin
Office Phone: 662-325-0214
Email: hwan@cfr.msstate.edu
Office hour: By appointment or Wednesday: 3:00 PM to 5:00 PM

COURSE DESCRIPTION: This course is designed to introduce students to different resin concepts, resin manufacturing and quality evaluation of various biocomposite products. These products cover glulam, plywood, particleboard, oriented strand board and fiberboard. Also, discussed are polymers and their products used for coating and finishing of the composites.

Adhesives and Biocomposites (SBP 4113/6113)
Syllabus

Course Learning Objectives:

Upon completion of this course, students will have an understanding of:

1. Different resin technologies for biocomposite production
2. Different resin technologies for coating
3. Different resin evaluation technologies
4. UF and PF resin manufacturing technologies

Required Text: There is no textbook for this class. Reading material will be posted on the MyCourses course web site.

Prerequisites: SBP 2123, SBP 3113, SBP3123, and CH1053 or consent of instructor

Methods of Instruction: Classroom lectures, labs, discussions, presentations.

Exams: Exams are composed of a midterm and final, together with quizzes, which are closed book style.

For Undergraduate students:

Participation	5%
Laboratory work	20%
Quizzes	20%
Midterm Exam	20%
Final-exam	35%

For Graduate Students:

Graduate students are graded with exams, quizzes and project report:

Participation	5%
Laboratory work	20%
Quiz	20%
Graduate project (discussing with major professor)	15%
Midterm Exam	20%
Final-exam	20%

Policy on Missed Assignments: Optionally, in-class, oral presentations of reading assignments will be used for improving exam grades, if necessary. A missed test will be given a score of zero unless an arrangement is made before the test.

Classroom Policies & Conduct: Attendance is required for class and laboratory periods. After 3 absences, the participation will be scored as zero.

Graduate Student Requirements: - Graduate students are required to give a presentation either on research conducted by students or a topic approved in conjunction with their major professor.

Grading:

Final percentage will be determined out of 100 points, and grades will be assigned as follows:

Grading scale:

A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F below 60%

Detailed Course Outline: (This course will meet for 2 lecture hours and 3 laboratory hours each week)

Week	Topic
1	Introduction A. Syllabus, course outline and expectations B. Review of adhesive global-wide market Lab 1 Lab Safety
2	Introduction of organic materials, polymers, and wood adhesives A. Organic and polymer materials B. Wood adhesives Lab 2 Polymers and adhesives
3	Principles of polymer chemistry, thermosetting/thermoplastic wood adhesives and practices A. Principles of polymer chemistry, thermosetting B. Thermoplastic wood adhesives and practices Lab 3 Thermosetting vs thermoplastics
4	Urea-formaldehyde and Urea-melamine-formaldehyde resin; particleboards A. Urea-formaldehyde resin and particleboard B. Urea-melamine-formaldehyde resins and particleboard Lab 4 Preparation of UF resins
5	Phenol-formaldehyde and phenol-resorcinol-formaldehyde resins; plywood and OSB A. Phenol-formaldehyde resins and OSB B. Phenol-resorcinol-formaldehyde resins and plywood Lab 5 Testing of UF resins and lab PB preparation
6	Isocyanate and polyurethane resins; glulam and cross-laminated timber A. Isocyanate resins B. Polyurethane resins; glulam and cross-laminated timber Lab 6 Preparation of OSB binder PF resins
7	Midterm Review and Exam A. Midterm Review B. Midterm Exam Lab 7 Testing of PF and PRF resins
8	Polyvinyl acetate adhesives; Nano technology applications in adhesives A. Polyvinyl acetate adhesives B. Nano-technology applications in adhesives Lab 8 PRF resin and laminated beam preparation
9	Bio-technology application in adhesives A. Enzyme modified chitosan for resin B. Enzyme modified lignin for resin Lab 9 Nano clay and PRF resin for glulam

10	Green concept adhesives A. Bio-polyol for polyurethane resins B. Recycled polyurethane materials Lab 10 Plywood testing/Review
11	Mechanisms of adhesive bonding of biomaterials A. Mechanisms of adhesive bonding of biomaterials I B. Mechanisms of adhesive bonding of biomaterials II Lab 11 Testing of water barrier paints for prevention of OSB thickness swelling
12	Introduction to coating technology A. Coating technology I B. Coating technology II Lab 12 Testing of water barrier paints & review
13	Evaluation of adhesives: methods and standards A. Evaluation methods B. Evaluation standards Lab 13 ASTM and APA Standards
14	Future and challenge of adhesive and class presentations A. Future and challenge of adhesives B. Future and challenge of new adhesives Lab 14 Class presentations
15	A. Review B. Exam

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.
"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.
SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Modify** **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4143/6143	Composite Wood Products	(3)

Current Catalog Description:

Two hours lecture. Three hours laboratory. (Prerequisite: FP 4113 or Consent of instructor). Study of physical and chemical parameters affecting reconstituted wood products; laboratory investigation of processing methods; industrial standards and quality control; markets.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4144/6144	Biocomposite Application and Manufacturing	(4)

New or Modified Catalog Description:

Three hours lecture. Three hours laboratory. (Prerequisite: SBP 2123, SBP 3113, SBP 3123, ~~SBP 4113/6113~~ and SBP 4113/6113 or Consent of instructor). This course evaluates the application of raw bio-materials (wood, non-wood biomaterial and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/20/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 4143/6143 Composite Wood Products to SBP 4144/6144 Biocomposite Application and Manufacturing and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Composite Wood Products

1. Catalog Description

Current Course: Composite Wood Products FP 4143/6143: Two hours lecture. Three hours laboratory. (Prerequisite: FP 4113 or Consent of instructor). Study of physical and chemical parameters affecting reconstituted wood products; laboratory investigation of processing methods; industrial standards and quality control; markets.

New Course: Biocomposite Application and Manufacturing SBP 4144/6144: Three hours lecture. Three hours laboratory. (Prerequisite: SBP 2123, SBP 3113, SBP 3123, and SBP 4113/6113 or Consent of instructor). This course evaluates the application of raw bio-materials (wood, non-wood biomaterial and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications.

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree and allows for a sequence of elective courses within the new curriculum
c. An additional hour has been added to the course
d. The change to the course description reflects the departmental changes from a wood focus to bioproducts
e. The prerequisite addition of the Sustainable Bioproducts core courses

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of the course title, course code and course description is necessary to more accurately reflect the new SBP curriculum and the changing industry. Modification of the hours of instruction to 4 credit hours will allow more time to cover this ever-growing field. The area of composite or engineered bio-products is the fastest growing and evolving area in our major with new products developed every year. The development of a healthy and productive society is highly related to sustainable development of biomaterial and bio-composite products industry, and education of qualified work force. The prerequisites of the core SBP courses provide the needed basic background knowledge on different raw materials, chemistry, processing, mechanics and bioproducts that are covered in this advanced course.

Learning outcomes:
Upon completion of this course, students will have an understanding of:

1. The manufacturing, process control and quality evaluation of the reconstituted and laminated bioproducts,
2. An understanding of fundamental science behind the biocomposite design and materials, and importance of controlling process variables through use of literature, discussion of case studies, laboratory work, and mill visits,
3. The skills necessary for control and optimization of manufacturing processes, and new product development.

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number did not change, except for credit hours described below.

c. COURSE TITLE: The course title will be changed to Biocomposite Application and Manufacturing to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have changed from 3 to 4. The area of composite or engineered bio-products is the fastest growing and evolving area in our major. Every year new products are added. Thus the additional lecture time will give students the needed time to adequately cover this expansive topic.

e. PREREQUISITE: The prerequisite for this course will be modified to include SBP 2123, SBP 3113, and SBP 3123. The old prerequisite of FP 4113 will be changed to SBP 4223/6223. These changes are needed to provide the student with the basic background knowledge on different raw materials, chemistry, processing, mechanics and bioproducts that are covered in this advanced course.

f. METHODS/HOURS OF INSTRUCTION: The class will be a three hour lecture and three hour laboratory class.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has minor changes to better reflect the current industry.

> *i*. Current description: This course involves the study of types of raw bio-materials (wood, non-wood and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications. The course reviews typical flow charts for glued wood lumber, veneer, strand, particle and bio-material fiber production processes, describe each process element in terms of functions, equipment type, and variable effects on properties of the final products. Several case studies of resin manufacturing and oriented strand board research and mill trials will be presented. The industrial standards to which these products are manufactured and the quality control procedures used to assure that these standards are met will be introduced. An introduction of process control, nano materials, and biotechnologies as used in bio-composite product industry and research, composite theory and a general idea of the economics of the manufacturing processes will be explored. Finally a general understanding of the types of challenges that face this industry and the industry's future potential will be examined.
>
> *ii*. Modified description: This course evaluates the application of raw bio-materials (wood, non-wood and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications. The course reviews typical flow charts for glued wood lumber, veneer, strand, particle and bio-material fiber production processes, describes each process element in terms of functions, equipment type, and variable effects on properties of the final products. Several case studies of resin manufacturing, oriented strand board research and mill trials will be presented. The industrial standards to which these products are manufactured and the quality control procedures used to assure that these standards are met will be introduced. Process control, nano-materials, and biotechnologies used in bio-composite product industry and research, composite theory and fundamentals of the economics of the manufacturing processes will be explored. Finally general challenges that face this industry and the industry's future potential will be presented.

i. COURSE CONTENT: The course content will be modified to fit the expanded topics. The course outlines for both the old and new syllabus are attached.

5. GRADUATE STUDENT REQUIREMENTS

Graduate student requirements will not change. Graduate students are required to give a presentation either about the research the student will conduct or a topic approved in conjunction with their major professor.

6. METHOD OF EVALUATION:

Exams are composed of a midterm and final, along with quizzes, which are closed book style.

For Undergraduate students:	
Participation	5%
Laboratory work & reports	20%
Quizzes	20%
Midterm Exam	20%
Final-exam	35%

For Graduate Students:	
Graduate students are graded with exams, quizzes and project report:	
Participation	5%
Laboratory work & reports	20%
Quizzes	20%
Graduate presentation (discussing with major professor)	15%
Midterm Exam	20%
Final-exam	20%

Final grade will be determined out of 100 points, and grades will be assigned as follows:
Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

OUT OF CLASS WORK

a. Laboratory Reports: Assigned after laboratories and due the next lecture.

b. Graduate Student Presentations: Presentations will be given during class but students must prepare out of class.

7. ACADEMIC MISCONDUCT:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:
This course would be essential for undergraduate and graduate students interested in composite bioproducts, material science, sustainable bioproducts, and related industries. In particular, this course is directed toward educating and developing a high quality work force for the biocomposite industries.

9. SUPPORT

Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every other Spring semester beginning 2016.

6. PROPOSED 24-CHARACTER ABBREVIATION:
Biocomposite Appl Manuf

COURSE CONTACT PERSON:
Dr. Hui Wan
Associate Professor
Department of Sustainable Bioproducts
hwan@cfr.msstate.edu
(662) 325-0214 Office

PROPOSAL CONTACT PERSON:
Dr. Rubin Shmulsky, Ph.D. ,Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

Composite Wood Products
FP 4143/614 Composite Wood Products
FP 4143/6143

Instructor: Dr. Hui Wan

662-325-0214

Office: 222FC11

hwan@cfr.msstate.edu

Office hour: By appointment or Wednesday: 3:00 PM to 5:00 PM

Class time: T TH 11:00-11:50

Meeting place: Franklin Center 112

Laboratory Time: Thursday from 1:00 PM to 4:00 PM

Teaching Assistant:

Mr. George Miller

Course description

This course involves the study of types of raw bio-materials (wood, non-wood and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications. The course reviews typical flow charts for glued wood lumber, veneer, strand, particle and bio-material fiber production processes, describe each process element in terms of functions, equipment type, and variable effects on properties of the final products. Several case studies of resin manufacturing and oriented strand board research and mill trials will be presented. The industrial standards to which these products are manufactured and the quality control procedures used to assure that these standards are met will be introduced. An introduction of process control, nano materials, and biotechnologies as used in bio-composite product industry and research, composite theory and a general idea of the economics of the manufacturing processes will be explored. Finally a general understanding of the types of challenges that face this industry and the industry's future potential will be examined.

Outcomes

After passing this course, the student will be familiarized with the reconstituted and laminated wood products field and will be provided a practical knowledge of bio-composite making and evaluation. The student should be able to understand the fundamental science of the bio-composite manufacturing processes and catch the importance of controlling variables in the processes by literature, case study, lab work and mill observations. It will allow the student with the information obtained in this course to participate in mill daily process control, process optimization and new product development.

Prerequisites: FP4113/6113, Adhesives and Finishes

Suggested Prerequisites: Statistics
Wood Anatomy
Wood Chemistry
Wood Physics

Textbook: Engineered Wood Products: A guide for specifiers, designers and users by Dr. Stephen Smulski. Book should be ordered from the Forest Products Society at the following link: https://netforum.avectra.com/eweb/shopping/shopping.aspx?pager=1&site=fps&prd_key=53b85608-f6c1-4203-b04c-6b1641323164

Suggested reading list

Concise Encyclopedia of Wood and Wood-based Materials.

Marra, A.A. 1992. Technology of Wood Bonding. Van Nostrand Publ. New York.

Panshin, A.J. and C. de Zeeuw, 1980. Textbook of Wood Technology. McGraw-Hill, New York.

USDA. 2007. Wood Handbook: Wood as an Engineering Material, USDA Forest Prod. Lab.

Gen. Tech. Rep. FPL-GTR-113.

Articles delivered during class

Bio-composite related journals

- Bioresources http://www.bioresourcesjournal.com/
- Cellulose http://link.springer.com/journal/10570
- European Journal of Wood and Wood Products http://link.springer.com/journal/107
- Forest Products Journal
- Holzforschung
- IAWA Journal http://www.iawa-website.org/
- International Wood Products Journal http://www.ingentaconnect.com/content/maney/iwp
- Journal of Forest Products Business Research
- Journal of Wood Engineering http://www.academicjournals.org/JWE/index.htm
- Pro Ligno http://www.proligno.ro/en/index.htm
- Wood Science http://link.springer.com/journal/10086
- Wood and Fiber Science http://www.metapress.com/content/120742
- Wood Science and Technology http://link.springer.com/journal/226
- Wood Material Science & Engineering http://www.tandfonline.com/toc/swoo20/current#.Ub5-0-fVApk

Grading

Undergraduate

Evaluation components:	(FP4143)	% of Grade
Participation		5
Laboratory work		20
Quiz		20
Semi-exam		20
Final-exam		35

Graduate

Evaluation components:	(FP6143)	% of Grade
Participation		5
Laboratory work		20
Quiz		20
Graduate project (discussing with major professor)		15
Semi-exam		20
Final-exam		20

Note:

Exams: Material will come from lecture, text, and supplemental materials. Students are expected to read the pertinent materials as they are covered. If a student must miss this exam then the said student must bring a valid University excused absence in writing to the instructor (valid excuses include verified illness, family emergencies, death in the family, etc.). In such a case, ***written*** documentation of the excuse must be provided. No make-up quizzes and exam will be given, unless the student has an excused absence. No work will be accepted after the due date. If a student misses an exam without ***PRIOR*** approval of the instructor a grade of ***zero*** will be assigned. Each student is solely responsible for completing his or her exam. No cooperation, collaboration, team effort, buddy system, load sharing, friendly discussion, or similar is permitted on exam day.

Composite Wood Products Class Schedule

Date	Subject
1-14	Class Review, Ethics & Responsible Conduct Timbers of Canada and the USA Timbers of Central and South America
1-16	Introduction to Wood-Based Materials
1-16	TOUR: Gulf States Paper
1-21	History of Timber Use
1-23	Industries Based on Wood
1-23	TOUR: Lab safety and gluelam production
1-28	Adhesives and Adhesion
1-30	Glued Joints & Glued Laminated Timber
1-30	Lab: Gluing Laminated Wood
2-4	Wood as a Substrate for Gluing
2-6	Wood Structure & Gluing
2-6	Lab: Testing Laminates
2-11	Wood Veneers as a Substrate for Gluing
2-13	Plywood
2-13	Lab: Plywood Manufacture
2-18	Laminated Veneer Lumber
2-20	Formulating Plywood and LVL Adhesives
2-20	Lab: LVL Manufacture
2-25	Wood Strands as a Substrate for Gluing
2-27	OSB Manufacture
2-27	Lab: Mechanical Testing LVL and Plywood
3-4	PSL Manufacture
3-6	Test I
3-6	Lab: Manufacture of OSB
3-11	Spring Break
3-13	Spring Break
3-13	Spring Break
3-18	Particles as a substrate for gluing
3-20	Particleboard & Wet Process
3-20	Lab: Manufacture of Particleboard
3-25	Wood Color
3-27	Dry Process Fiberboard
3-27	Lab: Testing OSB and Particleboard
4-1	Hardboard and Insulation Board
4-3	Paper and Paperboard
4-3	TOUR: Particleboard mill
4-8	Health Hazards in Wood Processing
4-10	Class Reports Due & Student Presentations
4-10	TOUR: OSB mill
4-15	Mineral-Bonded Wood Composites
4-17	Wood Durability

4-17	Tour: Pulp and Paper plant
4-22	Wood Composites Used in Furniture
4-24	Building with wood
4-24	Guest speaker or additional student seminars
4-29	Fire and Wood
5-1	Reading Day
5-6	Final

Academic Integrity: Dishonest behavior is not tolerated. Occurrences of academic misconduct in accordance with guidelines and procedures outlined in the Academic Misconduct Policy, which may be accessed on the web at: http://www.msstate.edu/dept/audit/1207.html.

Honor Code: Mississippi State University has an approved Honor Code that applies to all students. The code is as follows: "As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Disability Services: As per 504 of the 1973 Rehabilitation Act and the American with Disabilities Act the instructors will reasonably accommodate students who demonstrate, through appropriate documentation, a qualified disability. Related documentation should stem from the department of Student Support Services is the designated unit on campus where students with disabilities identify themselves when requesting academic accommodations.

PROPOSED

BIOCOMPOSITE APPLICATION AND MANUFACTURING

Spring 2016

SBP 4144/6144 (4 credits)

Dept. of Sustainable Bioproducts

CLASS HOURS:	TBA
CLASS LOCATION:	TBA

INSTRUCTOR: Dr. Hui Wan
Office: 222 Franklin
Office Phone: 662-325-0214
Email: hwan@cfr.msstate.edu
Office hour: By appointment or Wednesday: 3:00 PM to 5:00 PM

COURSE DESCRIPTION: This course evaluates the application of raw bio-materials (wood, non-wood and resins) that are used to manufacture reconstituted and laminated bio-composite products and to classify these products by type, properties, and applications. The course reviews typical flow charts for glued wood lumber, veneer, strand, particle and bio-material fiber production processes, describes each process element in terms of functions, equipment type, and variable effects on properties of the final products. Several case studies of resin manufacturing, oriented strand board research and mill trials will be presented. The industrial standards to which these products are manufactured and the quality control procedures used to assure that these standards are met will be introduced. Process control, nano-materials, and biotechnologies used in bio-composite product industry and research, composite theory and fundamentals of the economics of the manufacturing processes will be explored. Finally general challenges that face this industry and the industry's future potential will be presented.

Biocomposite Application and Manufacturing (SBP 4144/6144)
Syllabus

Course Learning Objectives:

Upon completion of this course, students will have an understanding of:

1. The manufacturing, process control and quality evaluation of the reconstituted and laminated bioproducts,
2. An understanding of fundamental science behind the biocomposite design and materials, and importance of controlling process variables through use of literature, discussion of case studies, laboratory work, and mill visits,
3. The skills necessary for control and optimization of manufacturing processes, and new product development.

Required Text: Engineered Wood Products: A guide for specifiers, designers and users by Dr. Stephen Smulski, PFS Research Foundation, 1997.

Prerequisites: SBP 2123, SBP 3113, SBP 3123, and SBP 4223/6223 or Consent of instructor

Methods of Instruction: Classroom lectures, labs, discussions, presentations

Exams: Exams are composed of a midterm and final, along with quizzes, which are closed book style.

For Undergraduate students:

Participation	5%
Laboratory work & report	20%
Quizzes	20%
Midterm Exam	20%
Final-exam	35%

For Graduate Students:

Graduate students are graded with exams, quizzes and project report:

Participation	5%
Laboratory work & report	20%
Quizzes	20%
Graduate presentation (discussing with major professor)	15%
Midterm Exam	20%
Final-exam	20%

Policy on Missed Assignments:

There will be some reading assignments to present orally in class and the results used for upgrading exam grades. A test missed will be given a score of zero unless an arrangement is made before the test.

Graduate Student Requirements: - Graduate student requirements will not change. Graduate students are required to give a presentation either on research conducted by the students or a topic approved in conjunction with their major professor.

Grading:

Final percentage will be determined out of 100 points, and grades will be assigned as follows:

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct: Attendance is required for class and laboratory periods. After 3 absences, the participation score is 0.

Detailed Course Outline: (This course will meet for 3 hours T and TH lecture and 3 hours laboratory each week)

Week	Topic
1	Overview- Bioproducts (BP) application and manufacturing– Syllabus, course description, outcomes, grading, academic integrity, honor code, and disability services. Bio-resources of USA and Canada Lab1: Tour OSB mill and trip report
2	Biocomposite applications Biocomposite bonding principles Lab2:Tour particleboard mill and trip report
3	Biocomposite polymer and water relations A. BP water absorption theories B. BP and polymer relations and BP manufacturing flow path Lab3: Lab safety and glulam production
4	Polymer/resin manufacturing process A. Urea formaldehyde resin manufacturing process B. Phenol formaldehyde resin manufacturing process Lab4: Glulam test
5	Hot press and product evaluation and standards A. Hot press cycle design and modelling B. Biocomposite product evaluation and standards Lab5:Hot press lab
6	Glulam and plywood production and design values A. Glulam production and design value B. Plywood production Lab 6: Plywood manufacturing
7	Particleboard and OSB production and their environmental impact A. Particleboard production and their environmental impact B. OSB production and their environment impact Lab 7. Plywood testing
8	Midterm test and review A. Midterm review B. Midterm exam Lab 8: OSB manufacturing
9	Biomaterial and plastic composite production, acoustic and thermal performance, bio-technology application and inorganic bio-composites A. Biomaterial and plastic composite production, acoustic and thermal performance B. Inorganic bio-composites and Impact of bio-incising Lab 9: OSB panel testing

10	Nano concept application in BP and pulp and paper production A. Nano concept application in BP B. Pulp and paper production Lab10: PB manufacturing
11	Other biomaterial composites and lean manufacturing A. Bamboo composites B. Lean manufacture Lab 11: PB testing
12	Composite theory and design, nondestructive test and evaluation A. Composite theory and design B. Nondestructive test and evaluation Lab 12: Wood cement composite panel manufacturing
13	Recycling and Process diagnosis and optimization A. Recycling B. Process diagnosis and optimization Lab 13: Wood cement composite panel test
14	Green building and Class presentations A. Green building concept B. Class presentations Lab 14: Guest speaker
15	A. Review B. Final Exam

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Modify **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4213/6213	Wood Deterioration and Preservation	(3)

Current Catalog Description:

Two hours lecture. Three hours laboratory. (Prerequisite: Consent of instructor). Thermal, biological, and mechanical agents of wood products deterioration; biological control; design considerations; wood preservatives, preservation systems; treatability; preservative effectiveness; standards, pollution control.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4213/6213	Deterioration and Preservation of Biomaterials	(3)

New or Modified Catalog Description:

Two hours lecture. Three hours laboratory. (Prerequisite: SBP 1103 or Consent of instructor). Thermal, biological, and mechanical agents of bioproducts deterioration; biological control; design considerations; preservatives, preservation systems; treatability; preservative effectiveness; standards

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/14
Dean of College or School	7/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY™
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 4213/6213 Wood Deterioration and Preservation to SBP 4213/6213 Deterioration and Preservation of Biomaterials and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

WOOD DETERIORATION AND PRESERVATION

1. CATALOG DESCRIPTION

Current Course: Wood Deterioration and Preservation FP 4213/6213: Two hours lecture. Three hours laboratory. (Prerequisite: Consent of instructor). Thermal, biological, and mechanical agents of wood products deterioration; biological control; design considerations; wood preservatives, preservation systems; treatability; preservative effectiveness; standards, pollution control.

New Course: Deterioration and Preservation of Biomaterials SBP 4213/6213: Two hours lecture. Three hours laboratory. (Prerequisite: SBP 1103 or Consent of instructor). Thermal, biological, and mechanical agents of bioproducts deterioration; biological control; design considerations; preservatives, preservation systems; treatability; preservative effectiveness; standards

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree
c. The change to the course description reflects the departmental changes from a wood focus to bioproducts
d. The prerequisite addition of the Sustainable Bioproducts introductory course

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification: The modification of this course title, course code and course description is necessary to more accurately reflect the changing industry. As the use of 'green' ligno-cellulosic materials increases, an understanding of the agents, both biotic and abiotic, which deteriorate products incorporating such materials into their matrix, is increasingly important. The blending of materials from widely different feedstocks further complicates the issue. Protectants are becoming more diversified and technologies for incorporating them into commodities are more sophisticated. A better understanding of aspects of deterioration and preservation will lead to higher quality commodities with longer service life. The prerequisite of the introductory course, SBP 1103, provides the needed basic background knowledge on the different bioproducts covered in this course.

Learning Outcomes:
Upon completion of this course, students will have an understanding of:

- Agents, biotic and abiotic, that degrade ligno-cellulosic materials;
- Treatment methods for protecting such materials from deterioration;
- Preservatives and preservation systems used in control of deterioration; Preservative effectiveness;
- Non-chemical control methods such as bio-product modification, design changes;
- Treatability of and treatment mechanics for biomaterials;
- Test methods used in evaluating treatments;
- Treated commodities and standards.

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number did not change

c. COURSE TITLE: The course title will be changed to Deterioration and Preservation of Biomaterials to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class remain unchanged.

e. PREREQUISITE: The prerequisite for this course will be modified to include SBP 1103. SBP 1103 is an introductory class that will provide the basic background information on the types of bioproducts discussed in this course.

f. METHODS/HOURS OF INSTRUCTION: The class will remain a two hour lecture and three hour laboratory class.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has a minor change to better reflect the current industry.

i. Current description: This course is designed to develop an understanding and professional expertise on the thermal, biotic, and abiotic agents which cause wood deterioration; biological control methods; design considerations; wood preservatives and preservation systems; treatability of wood; treatment mechanics including plant layout, design, process, control, and pollution control systems; preservative effectiveness; commodity standards; environmental concerns and law.

ii. Modified description: This course is designed to develop an understanding and professional expertise on the thermal, biotic, and abiotic agents which cause ligno-cellulosic deterioration; biological control methods; design considerations; wood preservatives and preservation systems; treatability; treatment mechanics including plant layout, design, process, control, and pollution control systems; preservative effectiveness; evaluation and commodity standards.

i. COURSE CONTENT: The course content will only slightly be modified to fit the expanded topic. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

Graduate student requirements will not change. Graduate students will be required to write one additional report on a topic assigned by the instructor. A different grade scale will be used for graduate students (see below).

6. METHOD OF EVALUATION:

There will be five hourly exams plus a final. The final will substitute for the lowest exam grade.
Hourly exams = 70% {final will substitute for lowest}. Final exam = 15% {final will substitute for lowest hourly, if higher; eg., a 95 on the final would substitute for a 73 on an hourly exam.}
Laboratory reports = 10%. Short presentations = 5%

Item	% of final mark	Undergraduate grade scale	Grade	Graduate grade scale
Hourly exams	70	90% +	A	93%+
Final exam	10	80-89%	B	85-92%
Lab reports[1]	15	70-79%	C	78-84%
Presentations	5	60-69%	D	70-78%
		<60%	F	<70%

[1] Graduate students will be required to prepare one additional report on a topic assigned by the instructor

OUT OF CLASS WORK

a. Laboratory Reports: Assigned after laboratories and due the next lecture.

b. Presentations: Presentations will be given during class but students must prepare out of class.

c. Graduate Student Extra Paper: Graduate students will be required to prepare one additional report on a topic assigned by the instructor

7. ACADEMIC MISCONDUCT:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:

This course would be essential for graduate students researching deterioration of bioproducts. It would help undergraduates better understand why protection is so important, especially in wood use. Non-majors would benefit from knowing how to protect their most valuable eventual investment, their home.

9. SUPPORT

Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every other Spring semester beginning 2016.

COURSE CONTACT PERSON:

Dr. HM Barnes
Bldg #5, Room 5102
662-325-3056
mbarnes@cfr.msstate.edu

PROPOSAL CONTACT PERSON:

Dr. Rubin Shmulsky, Ph.D. ,Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT
COURSE SYLLABUS
SPRING

COURSE NUMBER: FP 4213/6213

COURSE TITLE: Wood Deterioration and Preservation

TIME AND PLACE: T/TH 11:00-12:15
Mondays - 1:00-3:50
FPL5 Auditorium

INSTRUCTORS: T. L. Amburgey, H. M. Barnes and D. D. Nicholas

OBJECTIVES: To develop an understanding and professional expertise on the thermal, biotic, and abiotic agents which cause wood deterioration; biological control methods; design considerations; wood preservatives and preservation systems; treatability of wood; treatment mechanics including plant layout, design, process, control, and pollution control systems; preservative effectiveness; commodity standards; environmental concerns and law.

EVALUATION: Hourly exams = 50% {final will substitute for lowest}. Special topic = 20% {10% of paper, 10% for presentation}. Final exam = 20% {final will substitute for lowest hourly, if higher; eg., a 95 on the final would substitute for a 73 on an hourly exam.} Laboratory reports = 10%.

Item	% of final mark	Undergraduate grade scale	Grade	Graduate grade scale
Hourly exams	70	90% +	A	93%+
Final exam	10	80-89%	B	85-92%
Lab reports[1]	15	70-79%	C	78-84%
Presentations	5	60-69%	D	70-78%
		<60%	F	<70%

[1] Graduate students will be required to prepare one additional report on a topic assigned by the instructor

GRADUATE STUDENT REQUIREMENTS: Graduate students will be required to prepare one additional report on a topic assigned by the instructor. In addition, the grade scale for graduate students is different than for undergraduate students. See Grading

TEXT: Milton, F. T. 1994. THE PRESERVATION OF WOOD. A self study manual for wood treaters. Minnesota Extension Service MI-6413-S. 102 pp.

Wilkinson, J. G. 1979. Industrial Timber Preservation. Association Business Press. London. 532 pp. (Optional-some copies available in the Forest Products Department Library). Handout materials.

WOOD DETERIORATION AND PRESERVATION
FP 4213/6213
T/TH - 11:00-12:15; LAB-3:00-3:50M - FPL5 AUDITORIUM

	SUBJECT
TLA	Introduction and Overview
TLA	Fungi-biology
TLA	Fungi-enzymes, classification
TLA	Fungi control
TLA	***EXAM I***
TLA	Termites-biology
TLA	***HOLIDAY***
TLA	Termites-control, interactions with fungi
TLA	Beetles-Biology
TLA	Beetle Control
TLA	Other organisms (insects, marine bores, bacteria, algae)-biology
TLA	Other organisms-control
TLA	Laboratory testing procedures (1:00-3:50 P.M., FPL5) (Set up decay test for compression test experiment.) Susie Parikh
TLA	***EXAM 2***
TLA	Abiotic agents of deterioration and their control
TLA	Dip-Diffusion treatment laboratory
TLA	Timber bridges
TLA	Primary wood products-seasoning and storage
TLA	Log structures
TLA	Frame structures
TLA	***EXAM 3 (TLA)***
DDN	Accelerated wood decay test methods (meet with Linda Sites and Donnie Buckner in Building 4 Lab).
Tu	Anatomical structure of wood in relation to treatment
Th	Commercial wood preservatives
DDN	AWPA Standards for wood preservatives
DDN	

	Anatomical structure of wood in relation to treatment
DDN	Standard lab test methods for evaluating wood preservatives
DDN	Completion of decay test set-up on February 3rd
DDN	Report writing
DDN	Field test methods for evaluating wood preservatives
DDN	Tour of Dorman test site
DDN	***EXAM 4***
HMB	Plant Layout and Design
HMB	Preparation of material for treatment
HMB	***SUBJECT***
HMB	Preparation of material for treatment
HMB	Treatment processes
HMB	Treatment processes, lab and report
HMB	Remedial treatments
HMB	Remedial treatments
HMB	Remedial treatments
HMB	Specifications
HMB	Specifications
HMB	Specifications and Review
HMB	***EXAM 5***
TLA	Oral Presentation - papers due
TLA	Oral Presentations
TLA	Oral Presentations
TLA	Field Trip - Waverley
	FINAL EXAM

PROPOSED

DETERIORATION AND PRESERVATION OF BIOMATERIALS

SBP 4213/6213 (3 credits)

Dept. of Sustainable Bioproducts

Spring 2016




CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. H.M. Barnes
Forest Products Laboratory, Building 5, Room 5102
Office Telephone: 662-325-3056
Email: mbarnes@cfr.msstate.edu
Office hours: TBA

COURSE DESCRIPTION: This course is designed to develop an understanding and professional expertise on the thermal, biotic, and abiotic agents which cause ligno-cellulosic deterioration; biological control methods; design considerations; wood preservatives and preservation systems; treatability; treatment mechanics including plant layout, design, process, control; preservative effectiveness; evaluation and commodity standards

Deterioration and Preservation of Biomaterials (SBP 4213/6213)
Syllabus

Course Learning Objectives:
Upon completion of this course, students will have an understanding of:

- Agents, biotic and abiotic, that degrade lingo-cellulosic materials;
- Treatment methods for protecting such materials from deterioration;
- Preservatives and preservation systems used in control of deterioration; Preservative effectiveness;
- Non-chemical control methods such as bio-product modification, design changes;
- Treatability of and treatment mechanics for biomaterials;
- Test methods used in evaluating treatments;
- Treated commodities and standards.

Required Text:
Milton, F. T. 1994. THE PRESERVATION OF WOOD. A self study manual for wood treaters. Minnesota Extension Service MI-6413-S. University of Minnesota, 102 pp.

Wilkinson, J. G. 1979. Industrial Timber Preservation. Association Business Press. London. 532 pp. (Optional-some copies available in the Forest Products Department Library). Handout materials

Prerequisites: SBP1103 or Consent of instructor

Methods of Instruction: Two hours lecture. Three hours laboratory/demonstration.

Exams: There will be five hourly exams plus a final. The final will substitute for the lowest exam grade.
Hourly exams = 70% {final will substitute for lowest}. Final exam = 15% {final will substitute for lowest hourly, if higher; eg., a 95 on the final would substitute for a 73 on an hourly exam.}
Laboratory reports = 10%.
Short presentations = 5%

Policy on Missed Assignments:
No make-ups for missed assignments are allowed and will result in a zero grade for the assignment. If an exam is missed, the grade on the final will be substituted.

Graduate Student Requirements: Graduate students will be required to prepare one additional report on a topic assigned by the instructor. In addition, the grade scale for graduate students is different than for undergraduate students. See Grading below.

Grading:

Item	% of final mark	Undergraduate grade scale	Grade	Graduate grade scale
Hourly exams	70	90% +	A	93%+
Final exam	10	80-89%	B	85-92%
Lab reports[1]	15	70-79%	C	78-84%
Presentations	5	60-69%	D	70-78%
		<60%	F	<70%

[1] **Graduate students will be required to prepare one additional report on a topic assigned by the instructor**

Detailed Course Outline:
This class will meet for 2 lecture hours and 3 laboratory hours per week.

SUBJECT	***Class hours***
Introduction and Overview	1
Refresher: chemistry and anatomy as relevant to deterioration and protection	1
Laboratory testing procedures; Set up decay test for compression test experiment	3
Fungi classification	1
Fungal metabolism - enzymes	1
Laboratory - Fungi-biology (characteristics and ecology)	3
Fungi control	1
EXAM 1	1
Accelerated wood decay test methods	3
Termites-biology	1
Termites-control, interactions with fungi	1
Laboratory – Termite test methods 1	3
Beetles-Biology	1
Beetle Control	1
Laboratory – Termite test methods 2	3
Other organisms (insects, marine bores, bacteria, algae)-biology	1
Other organisms-control	1
Laboratory – Control of termites, beetles and other organisms	3
EXAM 2	1
Abiotic agents of deterioration and their control	1
Laboratory - Dip-Diffusion treatment	3
Timber bridges	1
Primary products-seasoning and storage	1
Log and frame structures (lecture + visit to log house, test house)	3
EXAM 3	1
Commercial wood preservatives	1
Laboratory - Completion of decay test	3
AWPA Standards for preservatives	1
Standard lab test methods for evaluating wood preservatives	1
Laboratory – Standard lab test methods for wood preservatives	3
Field test methods for evaluating wood preservatives	1
EXAM 4	1
Laboratory - Tour of Dorman test site	3
Plant Layout and Design	1
Treatment processes	1
Laboratory - Treatment processes	3
Remedial treatments	1
Remedial treatments	1
Laboratory - Remedial treatment demo lab	3
Wood preservative specifications	1
Wood preservative specifications	1
Laboratory - Short presentations	3
REVIEW	1
EXAM 5	1
FINAL EXAM	3

Code of behavior:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:
In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. [Will provide for where course is taught]

Disability statement:
It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Modify** **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4253/6253	Quantitative Methods in Forest Products and Furniture	(3)

Current Catalog Description:

Three hour lecture. (Prerequisites: MA 1613 or MA 1713, BIS 1013, or concurrent) Application of economic principals to the production and marketing of forest products; production theory of single and multiproduct firms; computer applications

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4253/6253	Quantitative Methods in Sustainable Bioproducts	(3)

New or Modified Catalog Description:

~~Three hour lecture. (Prerequisites: Proficiency in algebra, SBP 2123) The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables~~

Three hour lecture. (Prerequisites: MA1313 and MA1323 or equivalent and SBP 2123) The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables.

Approved:	***Date:***
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to modify the course FP 4253/6253 Quantitative Methods in Forest Products and Furniture to SBP 4253/6253 Quantitative Methods in Sustainable Bioproducts and has voted to fully endorse the modification.

Thank you for considering the support of this modification proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE MODIFICATION

Department of Sustainable Bioproducts (SBP)

Quantitative Methods in Forest Products and Furniture

1. Catalog Description

Current Course: Quantitative Methods in Forest Products and Furniture FP 4253/6253: Three hour lecture. (Prerequisites: MA 1613 or MA 1713, BIS 1013, or concurrent) Application of economic principals to the production and marketing of forest products; production theory of single and multiproduct firms; computer applications

New Course: Quantitative Methods in Sustainable Bioproducts SBP 4253/6253: Three hour lecture. (Prerequisites: MA1313 and MA1323 or equivalent and SBP 2123) The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables.

2. ITEMIZED LIST AND DESCRIPTION OF CHANGES

a. The course title change reflects the change in departmental name and the current industry language
b. The course code change reflects the new degree
c. The change to the course description reflects the departmental changes from a wood focus to bioproducts
d. The prerequisite change reflects the new degree requirements.

3. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
The modification of this course title, course code, course description, and prerequisites is necessary to more accurately reflect the new SBP curriculum and the changing industry.

Learning outcomes:
Provide students with a background of the tools commonly used in industry to evaluate common problems such as net worth of raw materials, the value of faster processing time through a machine center, and methods to determine relationships among variables.

4. ADDITIONAL INFORMATION

a. COURSE SYMBOL: The course symbol has been changed from FP to SBP. This change is needed to integrate this course as part of the new SBP degree.

b. COURSE NUMBER: The course number was not changed.

c. COURSE TITLE: The course title will be changed to Quantitative Methods in Sustainable Bioproducts to reflect the change in departmental name and focus.

d. CREDIT HOURS: The credit hours for this class have not changed.

e. PREREQUISITE: The prerequisite for this have been changed to reflect the courses freshman-sophomore classes now required by the new curriculum.

f. METHODS/HOURS OF INSTRUCTION: This has not changed. The class will be three hour lecture.

g. METHOD OF DELIVERY: There will be no modification in the method of delivery.

h. COURSE DESCRIPTION: The course description has changed to better reflect the course and the current industry.

i. Current description: Application of economic principals to the production and marketing of forest products; production theory of single and multiproduct firms; computer applications

ii. Modified description: The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables.

i. COURSE CONTENT: The course content will be modified slightly to fit the updated and current topics of industry. The course outlines for both the old and new syllabus' are attached.

5. GRADUATE STUDENT REQUIREMENTS

Graduate students are required to code an industry problem to evaluate the worth of raw materials in matrix form using MPSX format, successfully solve the matrix and interpret the results.

6. METHOD OF EVALUATION:

Grading will be based on test scores with the exams having equal weight. For Graduate Students, The Graduate Student Requirement will count as 2 exams.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Exams have equal weight. Final will be comprehensive
1st exam will be in class and cover the graphical method of linear programming
2nd exam will be 2- parts
Part 1 – inclass and cover linear programming tableau and interpretations
Part 2 – take home assignment to work a linear programming problem on the computer
3rd exam will cover the use of MS Excel to estimate regression equations

OUT OF CLASS WORK

a. Graduate Student students will be required to code an industry problem and submit a report.

7. ACADEMIC MISCONDUCT:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of the syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

8. TARGET AUDIENCE:

This course would be essential for undergraduate and graduate students interested in working in a sustainable bioproducts industry. Many of our former students have cited this class as one of the most important and relevant classes when employed in a forest products industry.

9. SUPPORT

Adequate resources are available to support this course. A letter of support is attached.

SPECIAL NOTES:

1. CROSS LISTING: None

2. EFFECTIVE DATE: Fall 2015

3. GENERAL EDUCATION COURSE DESIGNATION: None

4. EFFECTS ON OTHER COURSES:
No duplication exists.

5. PLANNED FREQUENCY:
This course will be taught every other Fall semester beginning 2017.

6. PROPOSED 24-CHARACTER ABBREVIATION:
Quant Method Sust Bioprod

COURSE CONTACT PERSON:

Dr. R. D. Seale
Office: 218 Franklin
Office Telephone: 662 325 3072
Email: desale@cfr.msstate.edu

PROPOSAL CONTACT PERSON:

Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CURRENT

Syllabus FP 4253/5253
Spring 2008
Dr. R. D. Seale
Office: Franklin Center of the Department of Forest Products
Phone: 662 325 3072

Linear Programming

- Graphical Method
- Simplex Method
- Exam 1
- Applications
- Sawmilling
- Plywood
- Shadow Pricing of Raw Materials
- Forecasting
- Qualitative
- Quantitative
  - Averages
  - Moving Averages
  - Regression Analysis
- Final Exam

Text: An Introduction to Management Science, Anderson, Sweeney and Williams
(The book is relatively unchanged – any version will suffice)

Grading: 10 point Scale
Exams have equal weight
Final if taken will be comprehensive

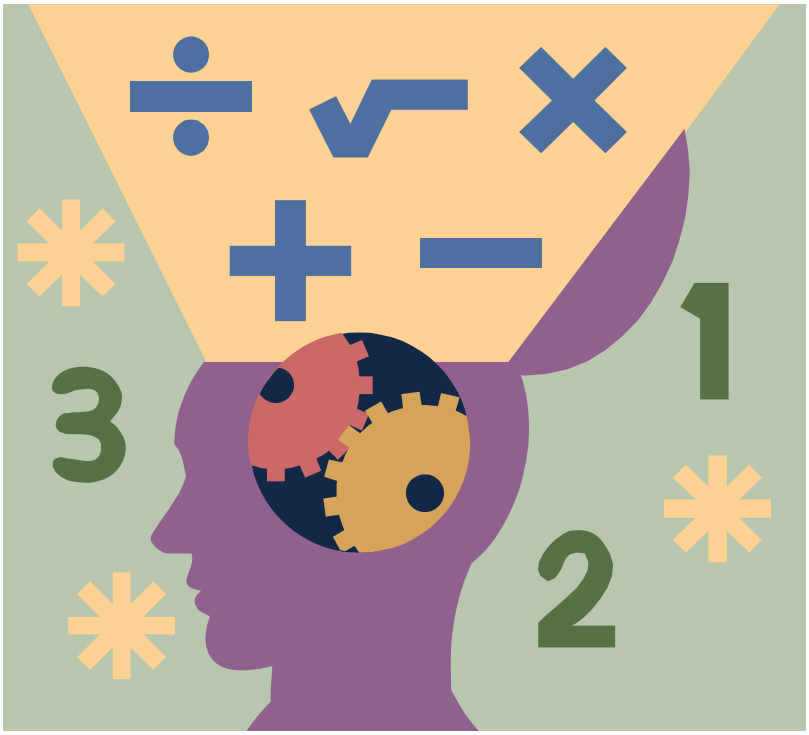
PROPOSED

QUANTITATIVE METHODS IN SUSTAINABLE BIOPRODUCTS

SBP 4253/6253 (3 credits)

Dept. of Sustainable Bioproducts

FALL 2017



CLASS HOURS: TBA

CLASS LOCATION: **TBA**

INSTRUCTOR:

Dr. R. D. Seale
Office: 218 Franklin
Office Telephone: 662 325 3072
Email: desale@cfr.msstate.edu
Office hours: TBA

Course description: The study and practical application of quantitative techniques commonly used in industry to evaluate the net worth of raw materials, and the cause and effect on process variables.

Quantitative Methods in Sustainable Biomaterials/ SBP 4253/6253
Syllabus

Course Learning Objectives: Provide students with a background of the tools commonly used in industry to evaluate common problems such as net worth of raw materials, the value of faster processing time through a machine center, and methods to determine relationships among variables.

Required Text: An Introduction to Management Science, Anderson, Sweeney and Williams
(The book is relatively unchanged – any version will suffice)

Prerequisites: MA1313, MA1323, and SBP2123 Materials and Processing.

Methods of Instruction: Three-hour lecture format per week.

Exams: Exams have equal weight. Final will be comprehensive
1st exam will be in class and cover the graphical method of linear programming
2nd exam will be 2- parts
Part 1 – inclass and cover linear programming tableau and interpretations
Part 2 – take home assignment to work a linear programming problem on the computer
3rd exam will cover the use of MS Excel to estimate regression equations

Policy on Missed Assignments: Missed assignments will be docked 10 points per late day unless student has extenuating circumstances. Allowance of extenuating circumstances at the discretion of the professor

Graduate Student Requirements: Graduate students are required to code an industry problem to evaluate the worth of raw materials in matrix form using MPSX format, successfully solve the matrix and interpret the results.

Grading: Grading will be based on test scores with the exams having equal weight. For Graduate Students, The Graduate Student Requirement will count as 2 exams.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct: Students are expected to be in class on time and participate in class discussions in a professional manner.

Study Suggestions: Review your notes taken during mill trips, SPB 2102 and notes from SBP2113 Materials and Processing. A review of each manufacturing facilities especially sawmilling and plywood with emphasis on raw material flow though each process will be very beneficial to understanding the course content.

Detailed Course Outline: (This course will meet for 3 lecture hours a week)

Week	Topic	Hours
1	Linear Programming – overview, types of problems, industrial uses	3
2	Graphical Method – Par Incorporated	3
3	Graphical Method Continued	3
4	Simplex Method – Par incorporated	3

5	Simplex Method – sensitivity analysis	3
6	Exam 1	1
	Exam results	1
	Applications – File management	1
7	Applications	
	Merging by rows	1
	Concatenation	1
	Programming with batch files	1
8	Customizing applications	
	Accounting rows	1
	Transfer rows	1
	Alternative objective functions	1
9	Sawmilling	3
10	Plywood	3
11	Shadow Pricing of Raw Materials	1
	Exam 2	1
	Exam 2 Results	1
12	Qualitative vs Quantitative Estimates	3
13	Forecasting – Regression Analysis	3
	Graduate Student Assignment Completion	
14	Moving Averages	1
	Financial Instruments	1
	Exam 3	1
15	Final	3

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Delete **Date Initiated:** 7/14 **Effective Date:** Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4313/6313	Environmental Principles	(3)

Current Catalog Description:

Environmental regulations pertaining to Forest Products industries. Handling and transport of hazardous compounds. Sources of environmental problems, fate in the environment, and common control technologies.

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to delete the course FP 4313/6313 Environmental Principles and has voted to fully endorse this course deletion.

Thank you for considering the support of this course deletion proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

PROPOSED COURSE DELETION

1. CATALOG DESCRIPTION

FP 4313/6313 Environmental Principles

(Prerequisites: FP 3012 or consent of instructor) Three hours lecture. Environmental regulations pertaining to Forest Products industries. Handling and transport of hazardous compounds. Sources of environmental problems, fate in the environment, and common control technologies.

2. JUSTIFICATION

The current course offering no longer adequately addresses the ever-expanding industrial environmental field. Adequate class time is not available to fully discuss the current issues, regulations, technologies, ethics, and mechanisms. As new innovative sustainable bioproducts come on line and into the market, these industries must treat their wastes before entering the environment. There are many contaminants common to most bioproducts industries, and there are contaminants unique to a particular industry. To prepare students to work in the sustainable bioproducts field, they must understand, be able to converse, and be able to act on the many and diverse environmental issues that they will face during their careers.

Consequently, we propose to expand this course into two course offerings one focused on the policies, regulations, and control technologies, and the other focused on the mechanisms and processes.

SBP 4313/6313. Bioproducts and the Environment (3 hours) Three hours Lecture. (Prerequisites: SBP 2012, 2123, 3123 or consent of instructor). An introduction to environmental topics and laws, environmental impact, and control technologies associated with emissions from diverse sustainable bioproducts industries, including global and national issues.

and

SBP 4333/6333. Bioproducts and Environmental Biotechnology (3 hours). Three hours Lecture. (Prerequisites: SBP 2012, 2123, 3123 or consent of instructor). Introduction to biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries, including wood preservatives, high organic process water, adhesives, resins and solvents.

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Delete **Date Initiated:** 7/14 **Effective Date:** Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4323/6323	Wood Physics	(3)

Current Catalog Description:

Equation derivation; dimensional behavior; psychometry; thermal properties; electricity; moisture movement; case studies/problems

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/20/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to delete the course FP 4323/6323 Wood Physics and has voted to fully endorse this course deletion.

Thank you for considering the support of this course deletion proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

PROPOSED COURSE DELETION

1. CATALOG DESCRIPTION

FP 4323/6323Wood Physics

(Prerequisites: FP 1103, MA 1613, PH 1113 or consent of instructor) Two hours lecture. Three hours laboratory. Equation derivation; dimensional behavior; psychometry; thermal properties; electricity; moisture movement; case studies/problems

2. JUSTIFICATION

The focus of the new degree is on a broader range of products, not just wood, thus a course focused only on wood physics is no longer relevant. However, it is still very important that students understand the basics of dimensional stability and moisture movement in various products. Thus a new course has been created at the 3000-level which will serve as the introductory course in physical and mechanical properties of lignocellulosic materials for the undergraduate students in Sustainable Bioproducts. The physics section focuses on understanding the most important physical properties of biomaterials (moisture content, specific gravity, thermal and electrical properties) and relationship of these properties to manufacturing processes and products uses. The mechanics section is designed for students to gain fundamental knowledge about mechanical properties of bioproducts as natural orthotropic composites. The course covers fundamental mechanical properties such as tensile, compression, shear, bending, etc at different size levels such as macro, micro, and nano; how to test, measure, and calculate these mechanical properties. The students will learn how these properties are affected by material structure itself and environmental factors, and how these properties affect structural performances of products using natural materials as their building block. With this foundation, subsequent courses will build the complex relationship among the mechanical, physical, chemical and biological properties of these bioproducts.

SBP 3113 Biomaterial Physics and Mechanics Two hours lecture and Two hours laboratory. (Prerequisite: MA1323 or equivalent). This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Delete **Date Initiated:** 7/14 **Effective Date:** Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
FP	4423/6423	Mechanical Properties	(3)

Current Catalog Description:

Strength and elasticity of wood and wood composites; variation in properties as function of structure, moisture, temperature and time; derivation of working stresses; structural design

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
			( )

New or Modified Catalog Description:

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/24/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to delete the course FP 4423/6423 Wood Mechanics and has voted to fully endorse this course deletion.

Thank you for considering the support of this course deletion proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

PROPOSED COURSE DELETION

1. CATALOG DESCRIPTION

FP 4423/6423 Mechanical Propoerties

(Prerequisites: FP 1103, MA 1613, PH 1113 or consent of instructor) Two hours lecture. Three hours laboratory. Strength and elasticity of wood and wood composites; variation in properties as function of structure, moisture, temperature and time; derivation of working stresses; structural design

2. JUSTIFICATION

The focus of the new degree is on a broader range of products, not just wood, thus a course focused only on wood mechanics is no longer relevant. However, it is still very important that students understand the basics of stress and strain and dimensional movement in various products. Thus a new course has been created at the 3000-level which will serve as the introductory course in physical and mechanical properties of lignocellulosic materials for the undergraduate students in Sustainable Bioproducts. The physics section focuses on understanding the most important physical properties of biomaterials (moisture content, specific gravity, thermal and electrical properties) and relationship of these properties to manufacturing processes and products uses. The mechanics section is designed for students to gain fundamental knowledge about mechanical properties of bioproducts as natural orthotropic composites. The course covers fundamental mechanical properties such as tensile, compression, shear, bending, etc at different size levels such as macro, micro, and nano; how to test, measure, and calculate these mechanical properties. The students will learn how these properties are affected by material structure itself and environmental factors, and how these properties affect structural performances of products using natural materials as their building block. With this foundation, subsequent courses will build the complex relationship among the mechanical, physical, chemical and biological properties of these bioproducts.

SBP 3113 Biomaterial Physics and Mechanics Two hours lecture and Two hours laboratory. (Prerequisite: MA1323 or equivalent). This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Add** **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	1203	Anatomy of Wood and Other Natural Materials	(3)

New or Modified Catalog Description:

(Prerequisite: SBP 1103 or consent of instructor). Two hours lecture and Three hours laboratory. Anatomy of commercial timber species and natural materials used to manufacture bioproducts; elements of botanical microtechnique, fundamentals of microscopy; gross and minute structural characteristics.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/28/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY

August 12, 2014

Department of Sustainable Bioproducts

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 1203 Anatomy of Wood and Other Natural Materials and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Anatomy of Wood and Other Natural Materials

Department of Sustainable Bioproducts

1. Catalog Description

SBP 1203. Anatomy of Wood and Other Natural Materials (3 hours) (Prerequisite: SBP 1103 or consent of instructor). Two hours lecture and Three hours laboratory. Anatomy of commercial timber species and natural materials used to manufacture bioproducts; elements of botanical microtechnique, fundamentals of microscopy; gross and minute structural characteristics.

2. Detailed Course Outline

Syllabus is attached

Week	Contact Hours	Topic
1	2 3	Introduction to plant materials Introduction to laboratory procedures and safety
2	2 3	Cell Wall Structure Microscope use and examining of cell walls
3	2 3	Softwood species Macro and micro examination of softwood structures
4	2 3	Softwood Anatomy Utilization of dichotomous key for softwood identification
5	2 3	Hardwood Species Macro and micro examination of hardwood structures
6	2 3	Hardwood Anatomy Utilization of dichotomous key for hardwood identification
7	2 3	Other Sustainable Materials Macro and micro examination of sustainable materials
8	2 3	Comparison of Softwood, Hardwoods, and Other Plant Materials Hands on demonstration of differences of materials
9	2 3	Water Movement Exercises demonstrating movement of water in natural materials
10	2 3	Wood Density Calculation and measurement of density
11	2 3	Defects Identifying defects in materials
12	2 3	Materials in Service Examination of natural material in service
13	2 3	Recycling Exercise on recycling materials
14	2 3	Disposal Demonstration of recycling of materials

15	2 3	Review of Course Final Exam

3. Method of Evaluation

Item	Weight (%)
Exam 1	10
Exam 2	10
Exam 3	10
Reports/Presentations	20
Final	10
Lab Notebooks	5
Lab quizzes	25
Lab final	10

Grading scale (on a 100 pt scale):
A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F below 60%

Out of Class Work: Students will be required to submit a term report on two tree species according to the attached syllabus. One species will be due at mid-term, the second near the end of term. A ten-minute illustrated, oral report on each species will be given to the class. The oral presentation should be turned in with the written report.

4. Justification and Learning Outcomes

Justification:
As global human population continues to increase and impact Earth, there will be increasing pressure on finite and renewable natural resources. This pressure may come from many sources including demand for sustenance and energy; disturbance, degradation, or loss of species and ecosystems; pollution; invasive species; soil, water, and air quality and quantity; and changing climate. To prepare students to work in the sustainable bioproducts field, they must understand, be able to converse, and be able to act on the many and diverse environmental issues that they will face during their careers.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change.

The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:

- To broaden student knowledge of the anatomy and botanical nomenclature of xylem tissue in gymnosperms and angiosperms;
- To create an understanding of tissue differences which permit species identification by xylem classification;
- To explain differences in gross properties and features of wood and other natural materials in light of their structural differences.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor

Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
Sustainable Bioproducts students will be required to take this course. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to PSS, ABE, and LA students to serve as an introduction to biomass anatomy.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. P. D. Jones
Office: Franklin # 226
Voice mail: 662-325-8454
E-mail: pdjones@cfr.msstate.edu

9. Graduate Student Requirements – Not Applicable

10. Planned Frequency
The course will be offered annually in the spring semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course serves as a freshman level introduction to basic biomass anatomy. There are upper division courses that expand on this course such as Wood Anatomy FP 4013 (taught in the same department) and Plant Anatomy BIO 4204. See letter of support from Dept. Head Biological Sciences.

12. Method of Instruction Code

B = Lecture/Lab

13. Method of Delivery

F = Face to Face

14. Proposed C.I.P. Number

03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation

Anatomy Wood Nat Mat

16. Proposed Semester Effective

Fall 2015

17. Other Appropriate Information

Required Text: Hoadley, R. B. 1990. *Identifying Wood: Accurate Results with Simple Tools.* Taunton Press, Newtown, CT

Supplemental Reading: US Forest Products Laboratory. 1999. *Wood Handbook-Wood as an Engineering Material*. Forest Products Society, Madison, WI. [This may be found for free downloading on the FPL website (http://www.fpl.fs.fed.us/);
Panshin, A. J.; deZeeuw, C. 1980. *Textbook of Wood Technology*, 4th edition. McGraw-Hill Book Company, New York;
Shmulsky, R.; Jones, P.D. 2011. *Forest Products & Wood Science*, 6th edition. Iowa State University Press;
Kollmann, F. P.; Côté, Jr., W. A. 1968. Principles of Wood Science & Technology, I. Solid Wood. Springer-Verlag, Berlin

Reference Website: An excellent website for wood anatomy is below. Try surfing the NCSU site for some good information:
http://legacy.ncsu.edu/WPS202/syllabus.html--good summaries and pics of various features plus practice quizzes.

18. Proposal Contact Person

Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

ANATOMY OF WOOD AND OTHER NATURAL MATERIALS

SBP 1203(3 credits)

SPRING 2016

Dept. of Sustainable Bioproducts

CLASS HOURS:	TBA
CLASS LOCATION:	112 Franklin
INSTRUCTOR:	Dr. P. D. Jones
	Office: Franklin # 226
	Voice mail: 662-325-8454
	E-mail: pdjones@cfr.msstate.edu
	Office hours: By appointment

COURSE DESCRIPTION: (Prerequisite: SBP 1103 or consent of instructor). Two hours lecture. Three hours laboratory. Anatomy of commercial timber species and natural materials used to manufacture bioproducts; elements of botanical microtechnique, fundamentals of microscopy, and fundamental properties; gross and minute structural characteristics.

Anatomy of Wood and other Natural Materials/ SBP 1203
Syllabus

Course Learning Objectives:

- To broaden student knowledge of the anatomy and botanical nomenclature of xylem tissue in gymnosperms and angiosperms;
- To create an understanding of tissue differences which permit species identification by xylem classification;
- To explain differences in gross properties and features of wood and other natural materials in light of their structural differences.

Required Text: Hoadley, R. B. 1990. *Identifying Wood: Accurate Results with Simple Tools.* Taunton Press, Newtown, CT

Prerequisites: SBP 1103 or consent of instructor

Methods of Instruction: Two hour of lectures per week and one 3-hour laboratory per week.
Each student will be given a set of wood samples in a pack at the beginning of the semester. These wood samples are to be used as study tools and **each week they should be brought to class**. The pack must be returned at the end of the semester or the student will receive a grade of incomplete.

E-Mail: E-mail is used extensively to communicate in this class and you will be receiving periodic messages. Please activate your email account.

MyCourses: This course has been set up on MSU's MyCourses. Go to this site to access the course syllabus, lab manual, handouts, slide presentations, resource materials, etc. If you pull up the electronic version of the syllabus and lab manual, you can simply click on the various links to access referenced websites. *You are responsible for the material on this site*!!

Supplemental Reading: US Forest Products Laboratory. 1999. *Wood Handbook-Wood as an Engineering Material*. Forest Products Society, Madison, WI. [This may be found for downloading on the FPL website (http://www.fpl.fs.fed.us/);
Panshin, A. J.; deZeeuw, C. 1980. *Textbook of Wood Technology*, 4th edition. McGraw-Hill Book Company, New York;
Shmulsky, R.; Jones, P.D. 2011. *Forest Products & Wood Science*, 6th edition. Iowa State University Press;
Kollmann, F. P.; Côté, Jr., W. A. 1968. Principles of Wood Science & Technology, I. Solid Wood. Springer-Verlag, Berlin,

Reference Website: An excellent website for wood anatomy is below. Try surfing the NCSU site for some good information:
http://legacy.ncsu.edu/WPS202/syllabus.html--good summaries and pics of various features plus practice quizzes.

Exams & Assignments: Three in-lecture exams will be given plus a final. The final will substitute for the lowest exam grade if higher. Exams will cover material covered in both lab and lecture. The 'unannounced' quizzes will be short answer. Assignments are to be completed on time and placed in your notebooks. A student believing that a mistake has been made in grading has three days after return of the quiz/exam to notify me. The grade will be corrected or deficiency explained to the student.

Policy on Missed Assignments: Missed assignments will result in a zero on the material, unless prior arrangements have been made with the instructor.

Grading:

Item	Weight (%)
Exam 1	10
Exam 2	10
Exam 3	10
Reports/Presentations	20
Final	10
Lab Notebooks	5
Lab quizzes	25
Lab final	10

Grading scale:

A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F below 60%

Reports: (see guide toward end of syllabus) Students will be required to submit a term report on two tree species according to the attached guidelines. One species will be due at mid-term, the second near the end of term. A ten-minute illustrated, oral report on each species will be given to the class. The oral presentation should be turned in with the written report.

Grading of Reports: A form for the evaluation of reports is below. Oral reports will be a maximum of 10 minutes.

Item	Points
Introduction	10
THE PLANT	
Habit	5
Leaves	5
Fruit	5
(If applicable)Bark	5
Ornamental value	5
Geographical distribution	5
THE MATERIAL	
Gross diagnostic features	5
Microscopy	5
Physical properties	5
Utilization	5
Tables	5
Figures	5
Grammar	

Neatness	5
Mechanics & Style	5
Conciseness/ Coherent/Understandable	5
Presentation style, professionalism	5
Organization, content	5
Illustrations	5
Total	**100**

Classroom Policies & Conduct: (see http://www.msstate.edu/dept/audit/91100.html)
Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code:
"*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"
Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F. Students are expected to attend all classes and to be punctual. If you must miss a class for a valid reason (illness, emergency, family death, legitimate student/professional activity), common courtesy dictates that you send me an email or call prior to the scheduled class. The use of tobacco products in class is forbidden. Food and drink are not allowed in class.

Detailed Course Outline:
Two hour of lectures per week and one 3-hour laboratory per week.

Week	Contact Hours	Topic
1	2	Introduction to plant materials
	3	Introduction to laboratory procedures and safety
2	2	Cell Wall Structure
	3	Microscope use and examining of cell walls
3	2	Softwood species
	3	Macro and micro examination of softwood structures
4	2	Softwood Anatomy
	3	Utilization of dichotomous key for softwood identification
5	2	Hardwood Species
	3	Macro and micro examination of hardwood structures
6	2	Hardwood Anatomy
	3	Utilization of dichotomous key for hardwood identification
7	2	Other Sustainable Materials
	3	Macro and micro examination of sustainable materials
8	2	Comparison of Softwood, Hardwoods, and Other Plant Materials
	3	Hands on demonstration of differences of materials
9	2	Water Movement
	3	Exercises demonstrating movement of water in natural materials
10	2	Wood Density
	3	Calculation and measurement of density
11	2	Defects
	3	Identifying defects in materials
12	2	Materials in Service
	3	Examination of natural material in service

13	2 3	Recycling Exercise on recycling materials
14	2 3	Disposal Demonstration of recycling of materials
15	2 3	Review of Course Final Exam

Code of behavior:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:
In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex.

Disability statement:
It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

GUIDE TO REPORT

Reports should be typewritten, free of grammatical errors, clear and concise. A cover sheet should include the report title, course number & title, date submitted, to whom submitted, and from whom the report is submitted. Each page (except the cover sheet) should be numbered. Illustrated oral reports 5-10 min long will also be given.

When graphs and tables are included, place them on separate sheets. Graphs and tables should stand on their own without reference to the text. Figure captions should be placed at the bottom of the Figure. Table Headings should be at the top of the Table. The report should be organized as follows:

INTRODUCTION
This section should include a brief background to the tree species including history and background. A complete taxonomic listing (Family, *Genus species*, authority) should be given. Citations should use the *Wood & Fiber Science* (http://www.swst.org/wfs/manuscriptForm.html) format.

TEXT BODY
This section should be divided into the following sections: **THE PLANT** (Habit, Leaves, Fruit, Bark, Ornamental value, Geographical distribution [a natural range map should be included]); and **THE MATERIAL** (Gross diagnostic features, Microscopy, Physical properties, Utilization). The text should be thorough and logically arranged. Figures and tables should be used to augment the data being presented. Be sure to cite source of graphical material when used.

LITERATURE CITED: Use the format described in *Wood & Fiber Science* (http://www.swst.org/wfs/manuscriptForm.html).

Feel free to expand your reports with photos and tables. Note due dates on the schedule. Photo sources should always be credited. The following sites may be useful:

http://www.fs.fed.us/database/feis/plants/tree/index.html
http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm
http://www.cnr.vt.edu/dendro/wwwmain.html
http://treesearch.fs.fed.us/
http://plants.usda.gov/

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

MAYMESTER COURSES

MISSISSIPPI STATE UNIVERSIY

NOTE: This form is a cover sheet that must accompany a proposal for inclusion of a course in the Maymester. Please fill out appropriate form, A or B and attach. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Date Initiated: 7/2014 **Effective Date:** ~~5/2016~~ FALL 2015

Experimental Course (4990):

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
SBP ~~SPB~~	2012	Introduction to Bioproduct Industries	(2)

Current Catalog Description:

~~(Prerequisites: None). This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States.~~

SBP 2012 Introduction to Bioproduct Industries: One hour lecture and One hour Laboratory/Field Trip. This course will be taught as a site tour of bioproduct industries focusing on conversion and use of biomass resources in the Southeastern United States. (During two weeks of intersession term, class will meet six hours per day.)

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

Maymester Course Proposal
Form A: Existing Course

Explain below how you can effectively deliver this course in an abbreviated (three week) format. Please keep this explanation to no more than one page. Attach your course syllabus.

This class is a tour of industries and is ideally suited for Maymester.

Students will meet during the Maymester period for both lectures and field trips to visit industry sites. There will be an in-lecture discussion before and/or after the field trips depending upon the length of each visit.

There are ten site visits planned. Some are nearby and may only take ½ day: examples are Columbus Weyerhaeuser pulp and paper, harvesting operation in Oktibbeha County, MS, Penick composting operation in Macon, MS, Norbord OSB plant in Gun Town, MS, and Tri-State Lumber in Fulton, MS. Others are further away and may take a full day for travel: examples are Batesville casket in Batesville, MS, Franklin Furniture in Houston, MS, Quality Plywood in Waynesboro, MS, Masonite Corporation in Laurel, MS, and Weyerhaeuser sawmill operation in Bruce, MS. It is impossible to hold this type of class during the regular semester because students typically have too many classes for even a ½ day trip.

It is very important that students in our field see these sites first hand. As an instructor, you can try to explain manufacturing steps, material handling procedures, gang saws, debarkers, rotary lathes, environmental safety technologies, etc, but to see these things first-hand allows students to fully appreciate and better understand the lecture materials in subsequent courses.

Course syllabus is attached:

Introduction to Bioproduct Industries

SBP 2012 (2 credits)

Dept. of Sustainable Bioproducts

Intersession

CLASS HOURS: TBA

CLASS LOCATION: Franklin Room 116

INSTRUCTOR: Dr. Hamid Borazjani
Office: Room 3205 Building 3 Dept. of Sustainable Bioproducts
Office Telephone: 325-3106
Email: hborazjani@cfr.msstate.edu
Office hours: Thursday from 2:00 – 4:00 P.M., Room # 3205, Building 3

COURSE DESCRIPTION: This Intersession (Maymester) course will focus on the conversion and use of the softwood and hardwood timber resources and other natural materials found in the Southeastern United States. Students will visit various industries, including lumber manufacturing, plywood, particle board (and other wood composites) paper, bio-fuel processing, pressure-treating, and the furniture industries. Students will be responsible for reports of each site visit. Class will meet approximately 1.5 hours lecture and 4.5 hours field trip per day.

Introduction to Bioproduct Industries/ SBP 2012
Syllabus

Course Learning Objectives: Upon completion of this course students should have an understanding of:

1: Tree selection for harvesting and machineries used in each step of harvesting operation.
2: Sawmill, wood-treating, pulp & paper operations and lumber grading,
3: How pollutants are remediated in wood preservation and pulp & paper industries.
4: Production of resin based wood products.
5: Manufacturing of office and home furniture

Required Text: None

Methods of Instruction: Face to face and on-site**.** Students will meet during the two-week period for both lectures and field trips to visit industry sites. There will be an in-lecture discussion before and/or after the field trips depending upon the length of each visit. Class will meet approximately 1.5 hours lecture and 4.5 hours field trip per day.

Exams: There are no exams. All grades will be based on required site visit reports.

Policy on Missed Assignments: Five percent will be deducted from total grade for each missed assignment.

Grading: Each site visit report will be graded and the average of all (10) reports will be counted as the **final grade.** Students will be provided with a report format that they must follow in writing their reports.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

The MSU 'Rules Pertaining to the Honor Code' states:
"Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it is sufficient grounds to initiate an academic dishonesty case."
http://students.msstate.edu/honorcode/

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://students.msstate.edu/honorcode/.

If a student in this class plagiarizes or copies another student on the trip reports, it is an automatic ZERO on that assignment and the student will be reported to the MSU Dean of Students Honor Code Council.

Detailed Course Outline:

This course will consist of 1.5 hour of lecture and 4.5 hour of field trip each day for 2 weeks.

DAY	Topic
1	Tour of Weyerhaeuser pulp and paper plant in Columbus, MS
2	Tour of Batesville casket in Batesville, MS
3	Tour of harvesting operation in Oktibbeha County, MS
4	Tour of Penick composting operation in Macon, MS
5	Tour of Norbord OSB plant in Gun Town, MS
6	Tour of Franklin Furniture in Houston, MS
7	Tour of Tri-State Lumber company in Fulton, MS
8	Tour of Quality Plywood in Waynesboro, MS
9	Tour of Masonite Corporation in Laurel, MS
10	Tour of Weyerhaeuser sawmill operation in Bruce, MS

Code of behavior:
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:
In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex.

Disability statement:
It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

*****No grades will be assigned in this course for students who fail to sign and return this form to the instructor*****

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	2123	Materials and Processing in Sustainable Bioproducts	(3)

New or Modified Catalog Description:

~~(Prerequisite: None). Three hours lecture. Introduction to processing of sustainable biomaterials including generation of by-products; also methods for product evaluation with American Society of Testing and Materials (ASTM) standards.~~

(Prerequisite: SBP 2012 or consent of instructor). Introduction to processing of sustainable biomaterials including generation of by-products; also methods for product evaluation with American Society of Testing and Materials (ASTM) standards.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 2123 Materials and Processing in Sustainable Bioproducts and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Materials and Processing in Sustainable Bioproducts

Department of Sustainable Bioproducts

1. Catalog Description

SBP 2123. Materials and Processing in Sustainable Bioproducts (3 hours). (Prerequisite: SBP 2012 or consent of instructor). Three hours lecture. Introduction to processing of sustainable biomaterials including generation of by-products; also methods for product evaluation with American Society of Testing and Materials (ASTM) standards.

2. Detailed Course

Syllabus is attached

Week	Topic	Contact Hours
1 & 2	What makes a bioproduct	2
	Measures of raw materials Log scales Kenaf – lb Cotton – lb or bale Corn, soybeans, rice – bushel or stalk measures	4
3 & 4	Timber processing into lumber Typical sawmill layouts Log scales Conversion factors By-product production Conversion factors	6
5 & 6	Timber processing into plywood Log lengths Typical mill layouts Conversion factors By-product productions Factors for successful gluing	6
7	1st Exam	1
7	Pelletized Products Traditional pellets Torrefied wood Market acceptance	2

8	Resins commonly used in Bioproducts vs non-bioproducts Urea Formaldehyde Phenol Formaldehyde Melamine MDI Others	3
9 & 10 & 11	Evaluation of Products American Society of Testing and Materials Standards (ASTM) as a method to evaluate products in a standard accepted practice ASTM D-1037 panel products ASTM D-143 and ASTM D-198 lumber products ASTM D-1036 utility poles	9
12	Factors to consider when working with a raw material Density Barriers to gluing Moisture content Drying rates Naturally occurring compounds in raw materials and impacts on finish products Rice Soybeans	3
13	Kenaf products Bast fiber Core Panels Specialty products Corn Grain products Stalk products	3
14	Student presentations of bioproduct analysis	3
15	Final	3

3. Method of Evaluation

Midterm exam	35%
Assignment	30%
Final exam	35%

Grading scale (on a 100 pt scale):

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work: Students will be required to submit one outside assignment to successfully complete the course. Students will choose a sustainable bioproduct and create a product analysis including a flowchart of the raw materials used to make the bioproduct and document the growing, harvesting, transportation, processing, and marketing outlets of the bioproduct including the by-products and destinations of each on a percentage basis.

4. Justification and Learning Outcomes

As global human population continues to increase and impact Earth, there will be increasing pressure on finite and renewable natural resources. This pressure may come from many sources including demand for sustenance and energy; disturbance, degradation, or loss of species and ecosystems; pollution; invasive species; soil, water, and air quality and quantity; and changing climate. To prepare students to work in the sustainable bioproducts field, they must understand, be able to converse, and be able to act on the many and diverse environmental issues that they will face during their careers.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees

and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment the first year may be low (estimated 5-6 students) but the expectation is by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:

- To provide students with an understanding of converting raw materials into finished products and resultant by-products produced for the major products in Mississippi.
- A general understanding of the methods used to evaluate the products will also be covered.
- An understanding of the processing barriers that affect product performance.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
Sustainable Bioproducts students will be required to take this course. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Industrial Technology, Agricultural Biological Engineering, material sciences and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. R. D. Seale
Office: 218 Franklin
Office Telephone: 662 325 3072
Email: desale@cfr.msstate.edu

9. Graduate Student Requirements – Not Applicable

10. Planned Frequency
The course will be offered annually in the fall semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course serves as a sophomore level introduction to the manufacturing and processing of sustainable bioproducts. There are some upper division courses taught in SBP that will expand on this course. Examples include SBP 4144 Biocomposite Application and Manufacturing, FP 4123 Lumber Manufacturing, and SBP 4213 Deterioration and Preservation of Biomaterials.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Mat Proc Sustain Bioprod

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

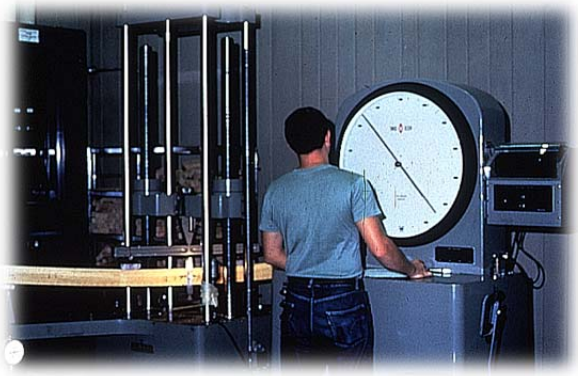
MATERIALS AND PROCESSING IN SUSTAINABLE BIOPRODUCTS

SBP 2123 (3 credits)

Dept. of Sustainable Bioproducts

FALL 2016






CLASS HOURS: TBA

CLASS LOCATION: **TBA**

INSTRUCTOR:

Dr. R. D. Seale
Office: 218 Franklin
Office Telephone: 662 325 3072
Email: desale@cfr.msstate.edu
Office hours: 8:AM – 5:PM

Course description: (Prerequisite: SBP 2012 or consent of instructor). An introduction to processing of sustainable bio materials including the generation of by-products. The course will also include standard methods for product evaluation and the utilization of American Society of Testing and Materials (ASTM) standards.

Materials and Processing in Sustainable Biomaterials/ SBP 2123
Syllabus

Course Learning Objectives: Provide students with an understanding of converting raw materials into finished products and resultant by-products produced for the major products in Mississippi. A general understanding of the methods used to evaluate the products will also be covered.

Required Text: There is not a required text, a number of selected articles and publications available on the internet will be referenced during lectures.

Methods of Instruction:

The instruction will be given in the form three hours of lecture each week during the semester. One outside assignment will be required to successfully complete the course. Students will choose a sustainable bioproduct and create a product analysis including a flowchart of the raw materials used to make the bioproduct and document the growing, harvesting, transportation, processing, and marketing outlets of the bioproduct including the by-products and destinations of each on a percentage basis.

Exams:
Final exam will be given during the last week of the term, and will cover the complete material taught during the course.

Grading:

Midterm exam	35%
Assignment	30%
Final exam	35%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Policy on Missed Assignments: Missed assignments will be docked 5 points per late day unless student has extenuating circumstances. Allowance of extenuating circumstances at the discretion of the professor but will adhere to MSU policy.

Classroom Policies & Conduct: Students are expected to be in class on time and participate in class discussions in a professional manner.

Detailed Course Outline: (This course will meet for 3 hours lecture each week)

Week	Topic	Contact Hours
1 & 2	What makes a bioproduct	2
	Measures of raw materials Log scales Kenaf – lb Cotton – lb or bale Corn, soybeans, rice – bushel or stalk measures	4
3 & 4	Timber processing into lumber Typical sawmill layouts Log scales Conversion factors By-product production Conversion factors	6
5 & 6	Timber processing into plywood Log lengths Typical mill layouts Conversion factors By-product productions Factors for successful gluing	6
7	1st Exam	1
7	Pelletized Products Traditional pellets Torrefied wood Market acceptance	2
8	Resins commonly used in Bioproducts vs non-bioproducts Urea Formaldehyde Phenol Formaldehyde Melamine MDI Others	3
9 & 10 & 11	Evaluation of Products American Society of Testing and Materials Standards (ASTM) as a method to evaluate products in a standard accepted practice ASTM D-1037 panel products ASTM D-143 and ASTM D-198 lumber products ASTM D-1036 utility poles	9

12	Factors to consider when working with a raw material Density Barriers to gluing Moisture content Drying rates Naturally occurring compounds in raw materials and impacts on finish products Rice Soybeans	3
13	Kenaf products Bast fiber Core Panels Specialty products Corn Grain products Stalk products	3
14	Student presentations of bioproduct analysis	3
15	Final	3

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.
SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2017~~ Fall 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	3113	Biomaterial Physics and Mechanics	(3)

New or Modified Catalog Description:

~~(Prerequisite: None). Two hours lecture and Two hours laboratory. This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses.~~

(Prerequisite: MA1323 or equivalent). Two hours lecture and Two hours laboratory. This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/26/2014
Dean of College or School	9/26/2014
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 3113 Biomaterial Physics and Mechanics and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Biomaterial Physics and Mechanics

Department of Sustainable Bioproducts

1. Catalog Description

SBP 3113. Biomaterial Physics and Mechanics (3 hours) (Prerequisite: MA1323 or equivalent). Two hours lecture and Two hours laboratory. This course focuses on understanding important physical and mechanical properties of biomaterials and the relationship of these properties to manufacturing processes and product uses.

2. Detailed Course Outline

Syllabus is attached

Week	Topic	Contact hours
1	Review of plant anatomy and chemistry as related to physical properties Moisture content and relative humidity, psychrometric charts Lab – Measuring moisture content gravimetrically and by electrometers Homework: Lab report	1 hour 1 hour 3 hours
2	Moisture movement, bound and free water, FSP, isotherms and hysteresis Permeability and drying Lab – Problems exercises related to EMC Homework: Problem assignment given out.	1 hour 1 hour 3 hours
3	Steady and unsteady state diffusion Concepts of weight, density and specific gravity Lab – Problems exercises related to effect of moisture content on density Homework: Problem assignment given out.	1 hour 1 hour 3 hours
4	Dimensional stability, shrinkage and swelling Lab – Determination of swelling in different directions by calipers Homework: Lab report	2 hours 3 hours
5	Equation applications and derivations Thermal properties Lab – Problem exercises on thermal properties of composite walls. Homework: Problem assignment given out.	1 hour 1 hour 3 hours
6	Combustion and pyrolysis Concepts of electrical properties, resistance, conductance Lab – Problem exercises on calorific values of biomass Homework: Problem assignment given out.	1 hour 1 hour 3 hours

7	Concepts of forces, supports, reactions, statics. concept of equilibrium, reaction forces calculation Lab – Lab tour	1 hour 1 hour 3 hours
8	Review, catch up Mid-term exam	2 hour 3 hours
9	Concepts of shear and bending moments. Concepts of stress and strain (axially loaded members), Hooke's law Lab – Introduction to ASTM standards and lab report requirements	1 hour 1 hour 3. hours
10	Introduction of bioproducts such as engineering materials Tensile properties of wood, kenaf, and bamboo fibers, and other natural fibers Lab – Test of biomaterial short columns and Hankinson Formula Homework: Lab report	1 hour 1 hour 3 hours
11	Flexural stresses, moment of inertia, section modulus Concepts of stiffness and strength Lab – Test of bending beams, part 1 Homework: Lab report	1 hour 1 hour 3 hours
12	Flexural stresses, moment of inertia, section modulus: continued Concepts of stiffness and strength: continued Lab – Test of bending beams, part 2 Homework: Lab report	1 hour 1 hour 3 hours
13	Factors on mechanical properties of bioproducts Connection and fastener performance in bioproducts Lab – Screw direct withdrawal test Homework: Lab report	1 hour 1 hour 3 hours
14	Mechanical properties: impact, vibration, creep, fatigue, acoustic emission Nondestructive testing methods Lab – Nondestructive testing method demonstration	2 hours 3 hours
15	Review, catch up Final exam week	2 hours 3 hours

3. Method of Evaluation

Grading:

Problem assignments:	10% (2.5% each)
Lab reports:	20% (4% each)
Pop-quizzes:	10% (of equal weight)
Mid-term exam:	20%
Final exam:	40%

Grading scale (on a 100 pt scale):

A 90% - 100%
B 80% - 89%
C 70% - 79%

D 60% - 69%
F below 60%

Out of Class Work: The students will complete total of 9 assignments outside of lecture time: 4 problem assignments and 5 laboratory reports.

4. Justification and Learning Outcomes

Justification:
This course will serve as the introductory course in physical and mechanical properties of lignocellulosic materials for the undergraduate students in Sustainable Bioproducts. These students must be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable products and apply that knowledge to manufacturing and processing of different bioproducts. The physics section focuses on understanding the most important physical properties of biomaterials (moisture content, specific gravity, thermal and electrical properties) and relationship of these properties to manufacturing processes and products uses. The mechanics section is designed for students to gain fundamental knowledge about mechanical properties of bioproducts as natural orthotropic composites. The course covers fundamental mechanical properties such as tensile, compression, shear, bending, etc. at different size levels such as macro, micro, and nano; how to test, measure, and calculate these mechanical properties. The students will learn how these properties are affected by material structure itself and environmental factors, and how these properties affect structural performances of products using natural materials as their building block. With this foundation, subsequent courses will build the complex relationship among the mechanical, physical, chemical and biological properties of these bioproducts.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
Upon completion of this course, students should have an understanding of:
Physics:

1. Importance of wood moisture content, how it changes and determination methods
2. Physical properties of wood: density, specific gravity and determination methods
3. Effect of moisture content on wood physical properties
4. Thermal and electrical properties of wood as related to building practices

Mechanics

5. Basic mechanical properties of biomaterials as orthotropic materials;
6. Fundamentals of statics and mechanics principles;
7. Mechanical properties testing methods and standards;
8. How mechanical properties of biomaterials are calculated using learned principles;
9. How mechanical properties of biomaterials are related to performance of products using biomaterials as their building blocks;
10. How mechanical properties are affected by other factors.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
Sustainable Bioproducts students will be required to take this course. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Industrial Technology, Agricultural Biological Engineering, material sciences and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record

Dr. Dragica Jeremic Nikolic (Physics)
Office: Franklin Center, Room 216
Office Phone Number: 662-325-0212
Email: djeremic@cfr.msstate.edu

Dr. Jilei Zhang (Mechanics)
Room 113
662-325-9413
jzhang@cfr.msstate.edu

9. Student Requirements – MA1323 or equivalent

10. Planned Frequency
The course will be offered annually in the spring semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course serves as a sophomore level introduction to the mechanical and physical properties of sustainable bioproducts. There are some upper division courses taught in SBP that will expand on this course. Examples include SBP 4144 Biocomposite Application and Manufacturing, SBP 4263 Strength Design of Furniture, FP 4223 and 4233 Furniture Production I and II, and SBP 4213 Deterioration and Preservation of Biomaterials. These topics were previously taught in two FP courses, FP 4323 Wood Physics and FP 4423 Mechanical Properties. These two courses will be deleted.

12. Method of Instruction Code

B = Lecture/Lab

13. Method of Delivery

F = Face to Face

14. Proposed C.I.P. Number

03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation

Biomaterial Phys Mech

16. Proposed Semester Effective

Fall 2015

17. Other Appropriate Information

None

18. Proposal Contact Person

Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

BIOMATERIAL PHYSICS & MECHANICS

SBP 3113 (3 credits)

Dept. of Sustainable Bioproducts

Spring 2017

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Dragica Jeremic Nikolic (Physics)
Office: Franklin Center, Room 216
Office Phone Number: 662-325-0212
Email: djeremic@cfr.msstate.edu
Office Hours: 3:00 -5:00 p.m., Wednesday

Dr. Jilei Zhang (Mechanics)
Room 113
662-325-9413
jzhang@cfr.msstate.edu
2:00 - 5:00 p.m., Friday

COURSE DESCRIPTION: The physics section focuses on understanding the most important physical properties of biomaterials (moisture content, specific gravity, thermal and electrical properties) and relationship of these properties to manufacturing processes and products uses. The mechanics section is designed for students to gain fundamental knowledge about mechanical properties of bioproducts as natural orthotropic composites. The course covers fundamental mechanical properties such as tensile, compression, shear, bending, etc at different size levels such as macro, micro, and nano; how to test, measure, and calculate these mechanical properties. The students will learn how these properties are affected by material structure itself and environmental factors, and how these properties affect structural performances of products using natural materials as their building block.

Biomaterial Physics & Mechanics/ SBP 3113
Syllabus

Course Learning Objectives:
Upon completion of this course, students should have an understanding of:
Physics:

1. Importance of wood moisture content, how it changes and determination methods
2. Physical properties of wood: density, specific gravity and determination methods
3. Effect of moisture content on wood physical properties
4. Thermal and electrical properties of wood as related to building practices

Mechanics

5. Basic mechanical properties of biomaterials as orthotropic materials;
6. Fundamentals of statics and mechanics principles;
7. Mechanical property testing methods and standards;
8. How mechanical properties of biomaterials are calculated using learned principles;
9. How mechanical properties of biomaterials are related to performance of products using biomaterials as their building blocks;
10. How mechanical properties are affected by other factors.

Required Text: There is no required text for this class. Class information and reading materials will be posted on MyCourses.

Prerequisites: MA1323 or equivalent

Methods of Instruction:
The instruction will be given in the form of two-hour classroom lectures, two-hour lab per week, and in-class discussions. The students will complete total of 9 assignments outside of lecture time: 4 problem assignments and 5 laboratory reports. Laboratory reports should include:

1. Description of methodology
2. Collected data
3. Results
4. Conclusions

Exams: This course has two written exams: mid-term and final exam. Each exam will cover the complete material taught prior to the exam. In addition, there will be unannounced quizzes, given at the discretion of the instructors.

Policy on Missed Assignments:
The students are expected to submit assignment papers two weeks upon completion of the relevant lab. Each unexcused, late assignment submission will result in penalty of 10% of the assignment grade. Excuses will be accepted up to one week upon the missed due date.

Grading:

Problem assignments:	10% (2.5% each)
Lab reports:	20% (4% each)
Pop-quizzes:	10% (of equal weight)
Mid-term exam:	20%
Final exam:	40%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

The students are expected to attend the classes. Attendances will be taken during each class. Medical and personal excuses, as defined by the Academic Operating Policy and Procedure of the University, will be accepted up to two weeks upon the missed class. Each missed and unexcused class will carry a penalty of 1% of final grade. You will be responsible for contacting the instructors as soon as possible following a missed class to arrange any make-up work or discuss a deadline extension due to circumstances beyond your control.

Detailed Course Outline: (This course will consist of 2 hours lecture and 3 hours laboratory each week)

Week	Topic	Contact hours
1	Review of plant anatomy and chemistry as related to physical properties Moisture content and relative humidity, psychrometric charts Lab – Measuring moisture content gravimetrically and by electrometers Homework: Lab report	1 hour 1 hour 3 hours
2	Moisture movement, bound and free water, FSP, isotherms and hysteresis Permeability and drying Lab – Problems exercises related to EMC Homework: Problem assignment given out.	1 hour 1 hour 3 hours
3	Steady and unsteady state diffusion Concepts of weight, density and specific gravity Lab – Problems exercises related to effect of moisture content on density Homework: Problem assignment given out.	1 hour 1 hour 3 hours
4	Dimensional stability, shrinkage and swelling Lab – Determination of swelling in different directions by calipers Homework: Lab report	2 hours 3 hours
5	Equation applications and derivations Thermal properties Lab – Problem exercises on thermal properties of composite walls. Homework: Problem assignment given out.	1 hour 1 hour 3 hours
6	Combustion and pyrolysis Concepts of electrical properties, resistance, conductance Lab – Problem exercises on calorific values of biomass Homework: Problem assignment given out.	1 hour 1 hour 3 hours
7	Concepts of forces, supports, reactions, statics. concept of equilibrium, reaction forces calculation Lab – Lab tour	1 hour 1 hour 3 hours
8	Review, catch up Mid-term exam	2 hour 3 hours

9	Concepts of shear and bending moments. Concepts of stress and strain (axially loaded members), Hooke's law Lab – Introduction to ASTM standards and lab report requirements	1 hour 1 hour 3. hours
10	Introduction of bioproducts such as engineering materials Tensile properties of wood, kenaf, and bamboo fibers, and other natural fibers Lab – Test of biomaterial short columns and Hankinson Formula Homework: Lab report	1 hour 1 hour 3 hours
11	Flexural stresses, moment of inertia, section modulus Concepts of stiffness and strength Lab – Test of bending beams, part 1 Homework: Lab report	1 hour 1 hour 3 hours
12	Flexural stresses, moment of inertia, section modulus: continued Concepts of stiffness and strength: continued Lab – Test of bending beams, part 2 Homework: Lab report	1 hour 1 hour 3 hours
13	Factors on mechanical properties of bioproducts Connection and fastener performance in bioproducts Lab – Screw direct withdrawal test Homework: Lab report	1 hour 1 hour 3 hours
14	Mechanical properties: impact, vibration, creep, fatigue, acoustic emission Nondestructive testing methods Lab – Nondestructive testing method demonstration	2 hours 3 hours
15	Review, catch up Final exam week	2 hours 3 hours

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex.

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	3123	Biomass to Bioproducts	(3)

New or Modified Catalog Description:

(Prerequisite: CH 1043 or equivalent). Three hours lecture. Introduction to chemical/physical properties of forestry and agro crops with overview of products derived from plant materials. Innovative and emerging bioproducts industries are described.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/26/2014
Dean of College or School	9/20/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 3123 Biomass to Bioproducts and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Biomass to Bioproducts

Department of Sustainable Bioproducts

1. Catalog Description

SBP 3123. Biomass to Bioproducts (3 hours) (Prerequisite: CH 1043 or equivalent). Three hours lecture. Introduction to chemical/physical properties of forestry and agro crops with overview of products derived from plant materials. Innovative and emerging bioproducts industries are described.

2. Detailed Course

Syllabus is Attached

Week	TOPIC	Contact hours
1	Introduction to the course, syllabus, course outline and guidelines Biomass sources, bioproducts and carbon sequestration	1 2
2	Review of organic chemistry and biochemistry Review of biomass anatomy	1.5 1.5
3	Wood vs non-woody plants: main compositional and physical properties Introduction to biomass chemistry: Cellulose, chitin and starch.	1 2
4	Introduction to biomass chemistry: Hemicelluloses, pictins, lignin and extractives.	3
5	Carbohydrates bioproducts Lignin and extractive bioproducts	1.5 1.5
6	Biofuels: concept, regulations and economy. REGULAR EXAM	1.5 1.5
7	Introduction to biomass thermochemical conversion pathways to biofuels: Pyrolysis and torrifaction, Gasification, Liquefaction.	1 1 1
8	Introduction to biomass biological conversion pathways to biofuels: Bioethanol production, Biodiesel production, Biobutanol production, etc.	 1 1 1
9	Introduction to biogas and anaerobic digestion, Introduction to solid biofuels (pellets and briquettes).	1.5 1.5
10	Emerging biomass bioproducts technologies:	1

	Sustainable packaging Bioproducts, Sustainable composite Bioproducts, Sustainable textile Bioproducts.	1 1
11	Emerging biomass bioproducts technologies: Bio-coating, Bio-adhesive, Bio-plastic,	1 1 1
12	Life Cycle Analysis (LCA) REGULAR EXAM	1.5 1.5
13	Student presentations	3
14	Material review	3
15	Finals	3

3. Method of Evaluation

Grading:

Exams	40% (20% each)
Assignments	20% (10% each)
Student paper and presentation	20% (10% each)
Final exam	20%

Grading scale (on a 100 pt scale):

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work: The students will complete 2 assignments and prepare one paper outside of lecture time. Assignments are due prior to the class on a specified date, and are meant as a review of up-to-date material. The paper, which will be presented at a class, will be an overview of a bioproduct of a student's choice, and approved by the instructor. The paper should cover the following topics: applications/uses of the bioproduct, choice of the material, processing overview, comparison to alternative products (if applicable), current trends.

4. Justification and Learning Outcomes

Justification:

This course will serve as the introductory course in the chemical properties of biomass for the undergraduate students in Sustainable Bioproducts. These students must be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable products and apply that knowledge to manufacturing and processing of different bioproducts. Innovative and emerging bioproducts industries, including bioenergy, will be described in terms of their products, economic and environmental benefits and limitations. With

this foundation, subsequent courses will build the complex relationship among the mechanical, physical, chemical and biological properties of these bioproducts.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, agriculture and wood fiberboards, wood polymer composites, and other contemporary engineered products. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make housing and other structures last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment the first year may be low (estimated 5-6 students) but the expectation is by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
The goal of this course is to broaden students' insight into the breadth and diversity of bioproducts, beyond the conventional uses of biomass for food and construction industry. Upon completion of this course, students should have an understanding of:

1. Chemical and physical properties of major chemical components of forest and agro-crops
2. Distribution of the components on macro and micro scale
3. Biomass and bioproducts concepts
4. Major chemicals derived from plants
5. Bioenergy concept and production

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at
http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
Sustainable Bioproducts students will be required to take this course. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Agricultural Biological Engineering, PSS, Industrial Technology, material sciences and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record
Dr. Mojgan Nejad
Office: Franklin Center, Room
Office Phone Number:
Email: mnejad@cfr.msstate.edu

9. Graduate Student Requirements – Not Applicable

10. Planned Frequency
The course will be offered annually in the spring semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course serves as a sophomore level introduction to the chemical properties of sustainable bioproducts and introduces students to the innovative sustainable bioproducts. There are some upper division courses taught in SBP that will expand on this course. Examples include SBP 4243 Sustainable Bioproducts, SBP Lignocellulosic Biomass Chemistry, SBP 4133 Biorefinery Processes, and SBP 4153 Biomass Biological Conversion.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Biomaterial Phys Mech

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

BIOMASS TO BIOPRODUCTS

SPRING 2017

SBP 3123 (3 credits)

Dept. of Sustainable Bioproducts

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Mojgan Nejad
Telephone: 325-xxxx
Email: mnejad@cfr.msstate.edu
Office hours:

COURSE DESCRIPTION:

This course introduces students to chemical and physical properties of forestry and agro crops and provides an overview of a large span of products derived from plant materials. The course describes major components of biomass chemistry, comparing woody and non-woody plants. Innovative and emerging bioproducts industries will be described in terms of their products, economic and environmental benefits and limitations.

Biomass to Bioproducts/ SBP 3123
Syllabus

Course Learning Objectives:
The goal of this course is to broaden students' insight into the breadth and diversity of bioproducts, beyond the conventional uses of biomass for food and construction industry. Upon completion of this course, students should have an understanding of:

1. Chemical and physical properties of major chemical components of forest and agro-crops
2. Distribution of the components on macro and micro scale
3. Biomass and bioproducts concepts
4. Major chemicals derived from plants
5. Bioenergy concept and production

Required Text: There is no required textbook. A compendium of learning material will be provided to students in a form of handouts or posted on MyCourses.

Prerequisites: CHE 1043 or equivalent

Methods of Instruction:
Three one hour classes will be given per week.
The students will complete 2 assignments and prepare one paper outside of lecture time. Assignments are due prior to the class on a specified date.
The paper, which will be presented at a class, will be an overview of a bioproduct of a student's choice. The topic must be discussed and approved by the instructor.

Exams:
Two exams will cover all of the material taught prior to the exam.

Final exam will be given during the last week of the term, and will cover the complete material taught during the course.

Grading:

Exam	40% (20% each)
Assignments	20% (10% each)
Student paper and presentation	20% (10% each)
Final exam	20%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Paper and presentation:
The paper, which will be presented at a class, will be an overview of a bioproduct of a student's choice. The topic must be discussed and approved by the instructor. The paper should cover the following topics:

applications/uses of the bioproduct, choice of the material, processing overview, comparison to alternative products (if applicable), current trends.
Order of students' presentations will be decided on voluntary bases, or alternatively arranged by the instructor.

Classroom Policies & Conduct:
The students are expected to attend the classes. Attendances will be taken during each class. Medical and personal excuses, as defined by the Academic Operating Policy and Procedure of the University, will be accepted up to two weeks upon the missed class. Each missed and unexcused class will carry a penalty of 1% of final grade. You will be responsible for contacting the instructor as soon as possible following a missed class to arrange any make-up work or discuss a deadline extension due to circumstances beyond your control.

Policy on Missed Assignments:
The students are expected to submit assignments during the designated class times. Each unexcused, late assignment submission will result in penalty of 10% of the assignment grade. Excuses will be accepted up to two weeks upon the missed due date.
The students will be assigned the presentation due time at least three weeks in advance. The student must notify the instructor in case that the presentation time is not to be met in order to reschedule the presentation. If no other class time is available, the student will submit a written report of the presentation due the Final exam time, and present the paper upon the Final exam.

Detailed Course Outline: (This course will consist of 3 hours lecture each week)

Week	TOPIC	Contact hours
1	Introduction to the course, syllabus, course outline and guidelines Biomass sources, bioproducts and carbon sequestration	1 2
2	Review of organic chemistry and biochemistry Review of biomass anatomy	1.5 1.5
3	Wood vs non-woody plants: main compositional and physical properties Introduction to biomass chemistry: Cellulose, chitin and starch.	1 2
4	Introduction to biomass chemistry: Hemicelluloses, pictins, lignin and extractives.	3
5	Carbohydrates bioproducts Lignin and extractive bioproducts	1.5 1.5
6	Biofuels: concept, regulations and economy. REGULAR EXAM	1.5 1.5
7	Introduction to biomass thermochemical conversion pathways to biofuels: Pyrolysis and torrifaction, Gasification, Liquefaction.	1 1 1
8	Introduction to biomass biological conversion pathways to biofuels: Bioethanol production, Biodiesel production,	1 1 1

	Biobutanol production, etc.	
9	Introduction to biogas and anaerobic digestion, Introduction to solid biofuels (pellets and briquettes).	1.5 1.5
10	Emerging biomass bioproducts technologies: Sustainable packaging Bioproducts, Sustainable composite Bioproducts, Sustainable textile Bioproducts.	1 1 1 1
11	Emerging biomass bioproducts technologies: Bio-coating, Bio-adhesive, Bio-plastic,	1 1 1 1
12	Life Cycle Analysis (LCA) REGULAR EXAM	1.5 1.5
13	Student presentations	3
14	Material review	3
15	Finals	3

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	3143	Biomass Characteristics and Production	(3)

New or Modified Catalog Description:

~~(Prerequisite: CH 1043, BIO 1134, MA 1313). Three hours lecture. Methods of field production and characteristics of biomass utilized for fuels and biochemicals.~~

(Prerequisite: CH 1043, BIO 1134, and MA 1313). Three hours lecture. Methods of field production and characteristics of biomass utilized for fuels and biochemicals.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/14
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 3143 Biomass Characteristics and Production and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Biomass Characteristics and Production

Department of Sustainable Bioproducts

1. Catalog Description

SBP 3143. Biomass Characteristics and Production (3 hours) (Prerequisite: CH 1043, BIO 1134, and MA 1313). Three hours lecture. Methods of field production and characteristics of biomass utilized for fuels and biochemicals.

2. Detailed Course Outline

Syllabus is attached

Contact Hours	TOPIC
1	Introduction to the course, syllabus, course outline, guidelines, honor code
1	The Renewable Fuel Standard and its impact on biomass-based fuels production
1	Review of biomass measurement methods, bulk density, moisture content, particle size, elemental analysis, ash content, Klason lignin test.
2	Biomass crop types grown specifically for energy production: establishment, harvesting techniques, yields and uses by conversion technology type (biochemical, gasification, pyrolysis, etc.)
1	Interpretation of the "Billion Ton Study".
2	Biomass collection during forest harvesting: stand types, harvesting equipment, transportation, production during sawmilling, collection and use of harvesting residue
1	Biomass densification methods: bulk density as related to transportation, factors influencing biomass densification.
1	Densification technologies: pelleting, briquetting, roll compression
1	Review of biodiesel production technology
1	Oils for biodiesel production from the distillers dried grains product from ethanol production Student choice or instructor assignment of research paper topic.
1	Oils from seed crops: soybean, rapeseed, sunflower, coconut, palm, jatropha
1	Oils from algae: autotrophic vs. heterotrophic algae, growing algae, extracting oil from algae
1	Conversion of seed oils to hydrocarbons.
1	Ethanol production: review of sugarcane and energy cane ethanol production
1	Production of ethanol from corn grain
1	Production of cellulosic ethanol.

2 Biomass gasification: engines driven by vapor from heated biomass, gasifier types
1 Utilization of gasifier syngas.

2 Review and mid-term exam
1 Tour of Pace Seed Lab gasification facility.

1 Combusting biomass: electricity generation, biomass storage for combustion utilization, biomass boiler types, problems with boiler types
1 EPA Maximum Achievable Control (MACT) issues
1 Torrefied wood: relative energy, production, pelletizing, co-firing with coal.

2 Anaerobic biomass digestion: definition of methane, feedstocks, syngas cleanup, land fill wells, lagoon production, production from municipal solid waste
1 Sludge production and disposal.

1 Pyrolysis: slow vs. fast pyrolysis, charcoal production via slow pyrolysis, *terra preta* soils, fast pyrolysis; Pyrolysis oil chemical and physical properties, pyrolysis reactor types
1 Production of hydrocarbons from pyrolysis oil; Distributed production of pyrolysis oil; Influence of mineral and carbohydrate content on pyrolysis oil yield
1 Tour of departmental pyrolysis oil facilities.

2 Review and 2nd mid-term exam
Research paper due
1 Tour of SERC Pilot pyrolysis and waste water conversion to lipids facility.

1 Biomass grinding: types of grinders, specific energy, screen size influence
1 Relationship between moisture content and biomass grinding, influence of bulk density
1 Influence of bulk density on grinding, relationship of particle size to ground bulk density; Dust explosions: causes and prevention.

1 Biomass flowability: influence of silos, surge areas, transport
Potholes and arching definition and prevention methods
1 Computation of biomass flowability: influence of silos, angle of internal fraction, chute angle, angle of repose, tensile strength
Angle of repose measurements in detail
1 Presentations of research paper contents.

3 Review and final exam at time and date scheduled by the university.

Total Contact Hours = 45

3. Method of Evaluation

The final exam will substitute for the lowest hourly exam if the final exam grade is higher. Final percentage will be determined out of 100 points, and grades will be assigned as follows:

Two hourly exams	50%
Field trip reports	5%
Unannounced quizzes	10%
Research paper	15%
Presentation of research paper	5%
Final exam	15%
Total	100%

Grading scale (on a 100 pt scale):

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work:
Students will be required to write a research paper whose topic is approved by the instructor as well as field trip reports. Each student will also give a presentation on their research paper.

4. Justification and Learning Outcomes

Justification:
Utilization of biomass for fuels and biochemicals will increase rapidly as the Renewable Fuel Standard mandates take effect. Highly trained individuals will be required to manage the production and characterization of biomass types for each product. For each biomass type currently processed to fuel or biochemical there are specific cropping systems and methods for handling. Methods of measurement, densification, and handling can differ radically for each biomass type and the renewable energy conversion method applied. For each biomass type currently converted to fuels or biochemical this course describes the cropping, measurement, densification and handling specifics. Special problems such as biomass grinding analysis, flowability in handling systems and dust explosion prevention are covered in detail.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from

which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
Upon completion of this course students should have an understanding of:

1. The influence of governmental policy on the adoption of biomass to produce fuels.
2. Determination of the production methods and characteristics of all major biomass types currently utilized for fuels and biochemical.
3. Basic knowledge of the fuel and biochemical products and the methods of their production for which the biomass types are grown.
4. Problems associated with biomass handling such as grinding energy, flowability, dust explosions and others.
5. Methods by which biomass type characteristics are determined.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This will be an elective for students in Sustainable Bioproducts. It will be strongly encouraged for those students interested in bioenergy and biochemicals. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Agricultural Biological Engineering, PSS, Industrial Technology, material sciences and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record

Dr. Philip H. Steele
Professor Emeritus
Department of Sustainable Bioproducts
Email: psteele@cfr.msstate.edu
(662) 325-8083

Dr. Mojgan Nejad
Assistant Professor
Department of Sustainable Bioproducts
Email: mnejad@cfr.msstate.edu

9. Graduate Student Requirements
Not Applicable

10. Planned Frequency
The course will initially be offered every other year in the fall semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course is designed to introduce an understanding of the characteristics and production of biomass types to produce fuels and biochemicals. A brief description of the fuel or biochemical to be produced and its production process will be given. This will be followed by identification of the biomass types that may be utilized for the production of the fuel or biochemical. A linkage between the fuel or biochemical product's requirements and the characteristics and methods of growth, harvesting and processing will be provided for biomass types. There is a class in PSS 4133 Fiber and Oilseed Crops, but the emphasis is on traditional fibers and oils, soybean and cotton, not for biofuels. There are several upper division courses taught in SBP that will complement this course. Examples include SBP Lignocellulosic Biomass Chemistry, SBP 4133 Biorefinery Processes, and SBP 4153 Biomass Biological Conversion.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Biomass Prod and Char

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
Bassam, N. E. 2010. HANDBOOK OF BIOENERGY CROPS. A Complete Reference to Species, Development and Applications. Earthscan Ltd, London. 516 pp.

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

Biomass Characteristics and Production

SBP 3143 (3 credits)

Dept. of Sustainable Bioproducts ***Fall 2017***

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Philip Steele
Location: SBD Building 1; Office No. 1201.
Office Phone Number: 662 325 8083
Email: psteele@cfr.msstate.edu
Office Hours: TBA

COURSE DESCRIPTION: This course is designed to introduce an understanding of the characteristics and production of biomass types to produce fuels and biochemicals. A brief description of the fuel or biochemical to be produced and its production process will be given. This will be followed by identification of the biomass types that may be utilized for the production of the fuel or biochemical. A linkage between the fuel or biochemical product's requirements and the characteristics and methods of growth, harvesting and processing will be provided for biomass types. Historical background on which biomass utilization for fuels and chemicals rests will be given by reference to the history of the Renewable Fuel Standard. Problems encountered during production such as waste disposal, dust explosions and others will be described. Methods by which biomass is characterized to measure its potential as a viable renewable biomass resource will be detailed.

Biomass Characteristics and Production / SBP 3143
Syllabus

Course Learning Objectives:

Upon completion of this course students should have an understanding of:

1. The influence of governmental policy on the adoption of biomass to produce fuels.
2. Determination of the production methods and characteristics of all major biomass types currently utilized for fuels and biochemical.
3. Basic knowledge of the fuel and biochemical products and the methods of their production for which the biomass types are grown.
4. Problems associated with biomass handling such as grinding energy, flowability, dust explosions and others.
5. Methods by which biomass type characteristics are determined.

Required Text: Bassam, N. E. 2010. HANDBOOK OF BIOENERGY CROPS. A Complete Reference to Species, Development and Applications. Earthscan Ltd, London. 516 pp.

Prerequisites: CH 1043, BIO 1134, and MA 1313

Methods of Instruction: Classroom lectures and campus field trips to bioenergy production facilities. Assigned readings in the required text. Copies of Powerpoint lectures will be posted on the course web site.

Exams: Exams will be short answer, short discussions of a subject, and true or false.

Policy on Missed Assignments: Missed quizzes and exams cannot be made up. Students will be apprised of the dates of exams and research papers and presentations well in advance such that a student may hand in such work ahead of time if an absence is anticipated. If an illness prevents completion of a research paper or causes an absence during a scheduled research presentation only a note from a doctor on a prescription form referring to the exact medical problem for the date involved will allow rescheduling of the due date. Student must email professor prior to the missed paper or presentation due date.

Grading:

The final exam will substitute for the lowest hourly exam if the final exam grade is higher. Final percentage will be determined out of 100 points, and grades will be assigned as follows:

Two hourly exams	50%
Field trip reports	5%
Unannounced quizzes	10%
Research paper	15%
Presentation of research paper	5%
Final exam	15%
Total	100%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

Students are advised to attend all lectures to maximize understanding of the material and to be present for unannounced quizzes. In addition, the MSU guideline for maximum absences allowed before failure of a course will be followed.

Students are required to follow the MSU code of honor and integrity as outlined in the MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outline under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html. All violations of these policies will be reported as described in the MSU policy statement.

Detailed Course Outline: (This course consists of 3 hours lecture each week)

Contact Hours	TOPIC
1	Introduction to the course, syllabus, course outline, guidelines, honor code
1	The Renewable Fuel Standard and its impact on biomass-based fuels production
1	Review of biomass measurement methods, bulk density, moisture content, particle size, elemental analysis, ash content, Klason lignin test.
2	Biomass collection during forest harvesting: stand types, harvesting equipment, transportation, production during sawmilling, collection and use of harvesting residue
1	Biomass densification methods: bulk density as related to transportation, factors influencing biomass densification.
1	Densification technologies: pelleting, briquetting, roll compression
1	Review of biodiesel production technology
1	Oils for biodiesel production from the distillers dried grains product from ethanol production
	Student choice or instructor assignment of research paper topic.
1	Oils from seed crops: soybean, rapeseed, sunflower, coconut, palm, jatropha
1	Oils from algae: autotrophic vs. heterotrophic algae, growing algae, extracting oil from algae
1	Conversion of seed oils to hydrocarbons.
1	Ethanol production: review of sugarcane and energy cane ethanol production
1	Production of ethanol from corn grain
1	Production of cellulosic ethanol.
2	Biomass gasification: engines driven by vapor from heated biomass, gasifier types
1	Utilization of gasifier syngas.
2	Review and mid-term exam
1	Tour of Pace Seed Lab gasification facility.
1	Combusting biomass: electricity generation, biomass storage for combustion utilization, biomass boiler types, problems with boiler types
1	EPA Maximum Achievable Control (MACT) issues
1	Torrefied wood: relative energy, production, pelletizing, co-firing with coal.
2	Anaerobic biomass digestion: definition of methane, feedstocks, syngas cleanup, land fill wells, lagoon production, production from municipal solid waste
1	Sludge production and disposal.
1	Pyrolysis: slow vs. fast pyrolysis, charcoal production via slow pyrolysis, *terra preta* soils, fast pyrolysis; Pyrolysis oil chemical and physical properties, pyrolysis reactor types
1	Production of hydrocarbons from pyrolysis oil; Distributed production of pyrolysis oil;

1	Influence of mineral and carbohydrate content on pyrolysis oil yield Tour of departmental pyrolysis oil facilities.
2 1	Review and 2nd mid-term exam Research paper due Tour of SERC Pilot pyrolysis and waste water conversion to lipids facility.
1 1 1	Biomass grinding: types of grinders, specific energy, screen size influence Relationship between moisture content and biomass grinding, influence of bulk density Influence of bulk density on grinding, relationship of particle size to ground bulk density; Dust explosions: causes and prevention.
1 1 1	Biomass flowability: influence of silos, surge areas, transport Potholes and arching definition and prevention methods Computation of biomass flowability: influence of silos, angle of internal fraction, chute angle, angle of repose, tensile strength, Angle of repose measurements in detail Presentations of research paper contents.
3	Review and final exam at time and date scheduled by the university.

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

If a student in this class cheats on an exam it is an automatic XF in the course and the student(s) will be reported to the MSU Dean of Students Honor Code Council.

If a student in this class plagiarizes on the paper or presentation, it is an automatic ZERO on that assignment and the student will be reported to the MSU Dean of Students Honor Code Council.

PLAGIARISM POLICY: Plagiarism is using other people's ideas, words, graphs, charts, etc. without clearly acknowledging the source of the information. It is a form of stealing and cheating. It is important for a student to avoid plagiarism.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4133/6133	Biorefinery Processes	(3)

New or Modified Catalog Description:

(Prerequisites: SBP 4023 or consent of instructor) Three hours Lecture. An overview of the different chemical and thermochemical biorefinery processes used to convert biomass into chemicals and fuels.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/26/2014
Dean of College or School	9/24/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4133/6133 Biorefinery Processes and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Biorefinery Processes

Department of Sustainable Bioproducts

1. Catalog Description (25 words or fewer)
SBP 4133/6133. Biorefinery Processes (3) (Prerequisites: SBP 4023 or consent of instructor) Three hours lecture. An overview of the different chemical and thermochemical biorefinery processes used to convert biomass into chemicals and fuels.

2. DETAILED COURSE OUTLINE
This course will meet twice a week for 1.5 contact hour per lecture
Syllabus is attached

Week	Contact Hours	Topic
1	1 2	Introduction to the course, syllabus, course outline and guidelines. Introduction of biomass and biorefinery, biomass abundance and availability
2	3	Review of biomass chemistry – biomass chemical composition, structures and chemistry of carbohydrates
3	1.5 1.5	Biorefinery concept: general introduction to biorefinery, current status & developments Biorefinery definition and examples, processing units, and the life cycle analysis sustainability issue (LCA)
4	3	Biomass pretreatment: physical and physicochemical pretreatment of biomass, chemical pretreatment, conclusions and prospective
5	1.5 1.5	Conversion of cellulose to platform sugars Conversion of hemicelluloses into platform sugars
6	1.5 1.5	Conversion of lignin to platform chemicals Thermochemical pyrolysis of biomass (I)
7	1.5 1.5	Exam # I Thermochemical pyrolysis of biomass (II)
8	3	Thermochemical liquefaction of biomass
9	3	Thermochemical gasification of biomass
10	3	Biorefinery with ionic liquids
11	3	Biorefinery with water and supercritical fluids
12	3	Organosolv biorefining platform for producing chemicals, fuels and materials from lignocellulose
13	1.5 1.5	Advanced membrane technology for products separation in biorefinery Exam # II
14	3	Emerging Topics Presentations
15	3	Finals

3. METHOD OF EVALUATION

	Undergraduate	Graduate
2 Exams	65	65
Attendance and class participation	5	0
Emerging Presentations	0	15
Final Comprehensive Exam	30	30
Total	100	110

Final grades will be assigned as follows:

	Undergraduate	Graduate
A	90 - 100	100 - 110
B	80 - 89	90 - 99
C	70 - 79	80 - 89
D	60 - 69	70 - 79
F	below 60	below 70

Out of Class Work:
Only the graduate students will be asked to give a presentation about specified topic related to biomass biorefinery

4. JUSTIFICATION AND LEARNING OUTCOMES

Justification:
In the view of declining petroleum resources, price instability and the growing concern about environmental protection, the developments of alternative ways to provide for our chemical and fuel needs become indispensable. Lignocellulosic biomass including wood, agricultural residues and dedicated bioenergy crops offer a significant potential as a renewable feedstock for the production of fuels and chemicals. This course will give students the basic knowledge about the different chemical and thermochemical biorefinery processes that can be used in the future to fulfill the increased demand on chemicals and fuels from the renewable resources.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Course learning objectives:
Upon completion of this course, students should have an understanding of:
1. Different biomass feedstocks and their chemical composition,
2. The motives for biomass biorefinery,
3. The concept of biorefinery plants,
4. Different chemical and thermochemical biorefinery pathways,
5. The bottlenecks in chemical and thermochemical conversion routes toward platform chemicals.

5. ACADEMIC MISCONDUCT

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. TARGET AUDIENCE
This will be an elective for students in Sustainable Bioproducts. It will be strongly encouraged for those students interested in biofuels and bioenergy. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Agricultural Biological Engineering, PSS, CHE, Industrial Technology, material sciences and those interested in Mississippi industries.

7. SUPPORT
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. INSTRUCTOR OF RECORD
Dr. El Barbary Hassan
Assistant Professor
Office: 3110B
Phone: 662-325-8344
Email: emhassan@cfr.msstate.edu

9. GRADUATE STUDENT REQUIREMENTS
Each graduate student will prepare and present a 15 min lecture on one subject related to biorefinery processes as part of their grade. Presentation grades will be based on coverage and knowledge of subject, oral communication skills, appropriate length of time, and overall appearance. In addition graduate student grades will be assigned on a 110 point scale as below:

100 - 110= A
90 - 99= B
80 – 89 = C
70 – 79 = D
Below 70 = F

10. PLANNED FREQUENCY
The course will initially be offered every other year in the spring semester.

11. EXPLANATION OF ANY DUPLICATION
There is no direct duplication of material in this course. Chemical Engineering offers a course called 'Fundamentals of Biofuels Production' CHE 4683/6683. Our proposed SBP course covers different topics than those in the CHE course. A side-by-side comparison of the syllabus for each class highlights these differences which are listed below. We have also pointed out where the topics are similar. In addition, the emphasis of our course is on the different biorefinery concepts and is not intended to be an engineering-based course.

1. Topics covered only in SBP syllabus are:
    a. Sources and chemical composition of different lignocellulosic biomass,
    b. Biorefinery concept and the life cycle analysis,
    c. Biomass pretreatment,
    d. Conversion of (cellulose, hemicellulose and lignin) to platform chemicals,
    e. Biorefinery with ionic liquids,
    f. Biorefinery with water and supercritical fluids,
    g. Organosolv biorefining platform,
    h. Advanced membrane technology for products separation in Biorefinery,

2. Topics covered only in CHE syllabus are:
    a. Biodiesel production and economics,
    b. Corn ethanol production and economics,
    c. Biobutanol production and economics,
    d. Cellulosic ethanol,
    e. Visiting different biofuel facilities.

3. Similar topics covered in both syllabi but with different perspectives are the pyrolysis and gasification processes. SBP course focuses on the effect of biomass composition, conditions of the processes and types of reactor, but CHE course emphasizes the process conversion of pyrolysis and gasification products into liquid hydrocarbons.

Lignocellulosic biomass including wood, agricultural residues and dedicated bioenergy crops offer a significant potential as a renewable feedstock for the production of fuels and chemicals. This field is rapidly growing and the new technologies and end products are evolving. This course will cover biomass resources; biorefinery concept and the different conversion processes with emphasis on the chemical and thermochemical pathways. There are several upper division courses taught in SBP that will complement this course. Examples include SBP Lignocellulosic Biomass Chemistry and SBP 4153 Biomass Biological Conversion. Students interested in this field will also be encouraged to take the CHE 4683 course as a professional elective.

12. METHOD OF INSTRUCTION CODE
C= Lecture

13. Method of Delivery

F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. PROPOSED 24-CHARACTER ABBREVIATION
Biorefinery Processes

16. PROPOSED SEMESTER EFFECTIVE
Fall 2015

17. OTHER APPROPRIATE INFORMATION
Biorefinery: From Biomass to Chemicals and Fuels, 2012, Edited by Michele Aresta, Angela Dibenedetto and Frank Dumeignil, De Gruyter.

18. PROPOSAL CONTACT PERSON

Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

Biorefinery Processes

Spring 2016

SBP 4133/6133 (3 credits)

Dept. of Sustainable Bioproducts

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR: Dr. El Barbary Hassan
Office: 3110B
Phone: 662-325-8344
Email: emhassan@cfr.msstate.edu
Office Hours: TBD

COURSE DESCRIPTION: In the view of declining petroleum resources, price instability and the growing concern about environmental protection, the developments of alternative ways to provide for our chemical and fuel needs become indispensable. Lignocellulosic biomass including wood, agricultural residues and dedicated bioenergy crops offer a significant potential as a renewable feedstock for the production of fuels and chemicals. Different technologies have been developed to refine biomass into separate components (Cellulose, hemicellulose and lignin) and to convert these components into chemicals and fuels. The biomass conversion (biorefinery) take place by means of a different chemical, thermochemical and biochemical processes. This course will cover biomass resources; biorefinery concept and the different conversion processes with emphasis on the chemical and thermochemical pathways.

Biorefinery Processes (SBP4133/6133)
Syllabus

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. Different biomass feedstocks and their chemical composition,
2. The motives for biomass biorefinery,
3. The concept of biorefinery plants,
4. Different chemical and thermochemical biorefinery pathways,
5. The bottlenecks in chemical and thermochemical conversion routes toward platform chemicals.

Required Text: Biorefinery: From Biomass to Chemicals and Fuels, De Gruyter 2012, Edited by Michele Aresta, Angela Dibenedetto and Frank Dumeignil.

Prerequisites: SBP 4023

Methods of Instruction: Three hours lecture, homework and presentation.

Exams: Two exams and final comprehensive exam, all exams will be mainly short answer questions.

Policy on Missed Assignments: Make-up exams will only be given for students who have a valid written excuse. Unexcused absence cannot be made up and will result in a "0" for any missed exam including the final. If you miss the final exam and have a valid written excuse, an average of the 3 regular exams will be assigned as the grade for the final exam. You will get a "0" for the final exam due to unexcused absence. For an excused absence, authentic documentation specifying the dates, and bearing a clear and legible signature of an authorized person is required.

Graduate Student Requirements: Every graduate student will prepare a power point presentation on an emerging topic related to biomass biorefinery and present in front of the class for discussion. The topic of the presentation will be determined by the instructor and agreed by the student. Presentations will be at the end of the semester during the class period.

Grading:

	Undergraduate	Graduate
2 Exams	65	65
Attendance and class participation	5	0
Emerging Presentations	0	15
Final Comprehensive Exam	30	30
Total points	100	110

Final grades will be assigned as follows:

	Undergraduate	Graduate
A	90 - 100	100 - 110
B	80 - 89	90 - 99
C	70 - 79	80 - 89
D	60 - 69	70 - 79
F	below 60	below 70

Classroom Policies & Conduct:

Roll will be taken in every class meeting. Full participation in classes is required for all students. If you need to miss a lecture due to illness or an emergency, you must contact the instructor prior to the class. If you cannot make it to class, you need to make provision for all class material you missed.

Detailed Course Outline: (This course will be a T TH class and consist of 3 hours lecture each week)

Week	Topic
1	Introduction to the course, syllabus, course outline and guidelines. Introduction of biomass and biorefinery, biomass abundance and availability
2	Review of biomass chemistry –biomass chemical composition, structures and chemistry of carbohydrates
3	Biorefinery concept: general introduction to biorefinery, current status & developments, biorefinery definition and examples, processing units, and the life cycle analysis sustainability issue (LCA)
4	Biomass pretreatment: physical and physicochemical pretreatment of biomass, chemical pretreatment, conclusions and prospective
5	Conversion of cellulose to platform sugars Conversion of hemicelluloses into platform sugars
6	Conversion of lignin to platform chemicals Thermochemical pyrolysis of biomass (I)
7	Exam # I Thermochemical pyrolysis of biomass (II)
8	Thermochemical liquefaction of biomass
9	Thermochemical gasification of biomass
10	Biorefinery with ionic liquids
11	Biorefinery with water and supercritical fluids
12	Organosolv biorefining platform for producing chemicals, fuels and materials from lignocellulose
13	Advanced membrane technology for products separation in biorefinery Exam # II
14	Emerging Topics Presentations
15	Finals

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4153/6153.	Biological Conversion of Biomass	(3)

New or Modified Catalog Description:

(Prerequisite: BIO1134 and BIO 1144 or consent of instructor). Three hours lecture. Introduction to concepts of conversion of biomass by organisms or isolated enzymes to chemicals focusing on breakdown of cellulose, lignin and hemicelluloses and enzyme kinetics.

Approved:	*Date:*
Department Head	5/14/14
Chair, College or School Curriculum Committee	8/28/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4153/6153 Biomass Biological Conversion and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Biological Conversion of Biomass

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4153/6153. Biological Conversion of Biomass (3 hours) (Prerequisite: BIO1134 and BIO 1144 or consent of instructor). Three hours lecture. Introduction to concepts of conversion of biomass by organisms or isolated enzymes to chemicals focusing on breakdown of cellulose, lignin and hemicelluloses and enzyme kinetics.

2. Detailed Course Outline

Syllabus is attached

Contact hours	Topic	IMPORTANT NOTICE
3	Syllabus, course outline; Biomass and biorefinery; History, importance and major applications of lignocellulosic biotechnology; bioreactors and biorefinery	
3	Biodegradation of lignocellulosic biomass: Lignocellulosics as a raw material (physical and chemical characteristics) Degradation: classification of fungi, brown and white rot, soft rot, bacterial degradation	
3	Challenges of degradation and pre-treatment Enzymes: central dogma, chemical nature, structure, specificity, naming and classification, enzyme kinetics, factors affecting activity proteins, recombinant expression and post-translation as related to bioreactors' issues	*QUESTIONS SET 1 HANDOUT*
3	Cellulases	
3	Ligninolytic enzymes	
3	Other major enzymes, eg: xylanases and amylases	*QUESTIONS SET 1 DUE* *QUESTIONS SET 2 HANDOUT*
3	Microbial growth: growth stages, medium formulations, pH, osmotic pressure	
3	Bioreactors: types and design	
3	Kinetics and microbiology of biological processes: Michaelis-Menten equation, inhibition kinetic models	*QUESTIONS SET 2 DUE QUESTIONS SET 3 HANDOUT*
3	Bioreactor control - sterilization and instrumentation	
3	Downstream processing	
3	Downstream processing	
3	Chemical analytical methods and microbiology techniques	*QUESTIONS SET 3 DUE*
3	Biotechnology regulations	
3	Final EXAM	

3. Method of Evaluation

One final exam will comprise 55% of the final grade. Each assignment will cover 15% of the final grade.

Three Assignments = 15% each
Final Exam = 55%

Grading scale (on a 100 pt scale):
A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F below 60%

Out of Class Work: The students will be given 3 assignments to complete outside of lecture time. Assignments are due prior to the class on a specified date.

4. Justification and Learning Outcomes

Justification:
This course introduces students to major concepts of conversion of biomass by living organisms or isolated enzymes to chemicals. The process of conversion focuses on mechanism of enzyme kinetics and breakdown of cellulose, lignin and major biomass hemicelluloses. The course covers steps from cultivation, i.e. cell isolation, bioreactor design and control and downstream processing. Major microbiology techniques and chemical analytical techniques relevant for the conversion process are presented.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
Upon completion of this course, students should have an understanding of:

1. Organisms and enzymes capable of degrading biomass
2. Requirements for organism/enzyme functioning
3. Calculation of rate of reaction
4. Bioreactor types, design and instrumentation of bioreactors
5. Cell processing upon fermentation
6. Techniques necessary for organism growth, enzyme and bioproducts' characterization

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at
http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This course will be an elective for students in Sustainable Bioproducts. It will be strongly recommended to students interested in production of biofuels and biochemicals. Students in our program will likely have career interests into fields and activities such as those of federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Agricultural Biological Engineering, PSS, Industrial Technology, Chemical Engineering, Biological Sciences, and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. Dragica Jeremic Nikolic
Office: Franklin Center, Room 216
Office Phone Number: 662-325-0212
Email: djeremic@cfr.msstate.edu

9. Graduate Student Requirements
Assignments for graduate students will be longer and more complex than the assignment requirements for undergraduate students. The final exam will also contain additional problem/questions for graduate students which will be of higher comprehensive complexity than the other problems.

10. Planned Frequency
The course will initially be offered every other year in the spring semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. The process of conversion in this course focuses on mechanism of breakdown of cellulose, lignin and major biomass hemicelluloses. The course covers steps from cultivation, i.e. cell isolation, and bioreactor design, control and downstream processing. There are several upper division courses taught in SBP that will complement this course. Examples include SBP Lignocellulosic Biomass Chemistry and SBP 4133 Biorefinery Processes.

12. Method of Instruction Code

C= Lecture

13. Method of Delivery

F = Face to Face

14. Proposed C.I.P. Number

03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation

Biol Conversion Biomass

16. Proposed Semester Effective

Fall 2015

17. Other Appropriate Information

None

18. Proposal Contact Person

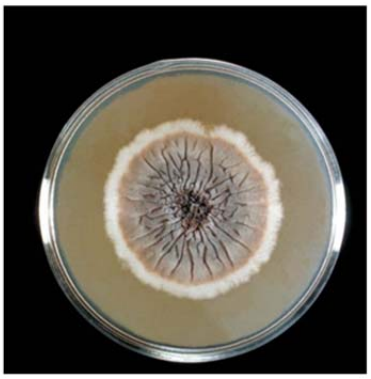
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

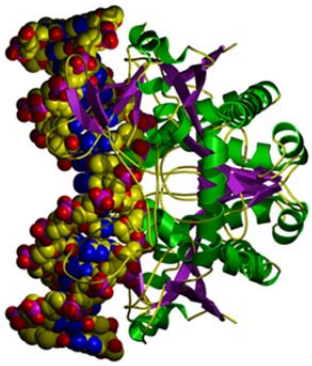
BIOLOGICAL CONVERSION OF BIOMASS

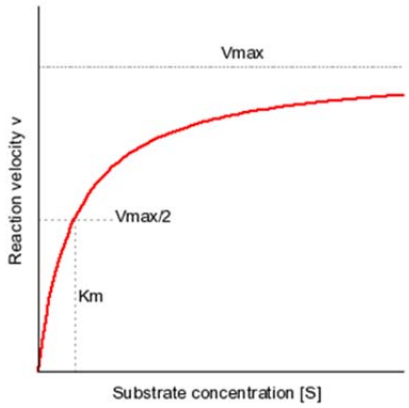
SPRING 2017

SBP 4153/6153 (3 credits)

Dept. of Sustainable Bioproducts







CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dragica Jeremic Nikolic
Telephone: 325-0212
Email: djeremic@cfr.msstate.edu
Office hours: Thu 9AM -12 PM or by appointment. Franklin Center 216

COURSE DESCRIPTION:

This course introduces students to major concepts of conversion of biomass by living organisms or isolated enzymes to chemicals. The process of conversion focuses on mechanism of breakdown of cellulose, lignin and major biomass hemicelluloses and enzyme kinetics. The course covers steps from cultivation, i.e. cell isolation, and bioreactor design, control and downstream processing. Major microbiology techniques and chemical analytical techniques relevant for the conversion process are presented.

Biological Conversion of Biomass (SBP 4153/6153)
Syllabus

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. Organisms and enzymes capable of degrading biomass
2. Requirements for organism/enzyme functioning
3. Calculation of rate of reaction
4. Bioreactor types, design and instrumentation of bioreactors
5. Cell processing upon fermentation
6. Techniques necessary for organism growth, enzyme and bioproducts' characterization

Required Text: There is no required textbook. A compendium of learning material will be provided to students in a form of handouts.

Prerequisites: BIO1134 and BIO 1144

Methods of Instruction: The instruction will be given in the form of classroom lectures. The students will be given 3 assignments to complete outside of lecture time. Assignments are due prior to the class on a specified date.

Exams: Final exam will be given during the last week of the term, and will cover the complete material taught during the course.

Policy on Missed Assignments: The students are expected to submit assignments during the designated class times. Each unexcused, late assignment submission will result in penalty of 10% of the assignment grade. Excuses will be accepted up to two weeks upon the missed due date.

Graduate Student Requirements:

Assignments for graduate students will be longer and more complex than the assignment requirements for undergraduate students. The final exam will also contain additional problem/questions for graduate students which will be of higher comprehensive complexity than the other problems.

Grading:

One final exam will comprise 55% of the final grade. Each assignment will cover 15% of the final grade.

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

The students are expected to attend the classes. Attendances will be taken during each class. Medical and personal excuses, as defined by the Academic Operating Policy and Procedure of the University, will be accepted up to two weeks upon the missed class. Each missed and unexcused class will carry a penalty of 1% of final grade. You will be responsible for contacting me as soon as possible following a missed class to arrange any make-up work or discuss a deadline extension due to circumstances beyond your control.

Detailed Course Outline: (this course will consist of 3 hours lecture each week)

Contact hours	Topic	IMPORTANT NOTICE
3	Syllabus, course outline; Biomass and biorefinery; History, importance and major applications of lignocellulosic biotechnology; bioreactors and biorefinery	
3	Biodegradation of lignocellulosic biomass: Lignocellulosics as a raw material (physical and chemical characteristics) Degradation: classification of fungi, brown and white rot, soft rot, bacterial degradation	
3	Challenges of degradation and pre-treatment Enzymes: central dogma, chemical nature, structure, specificity, naming and classification, enzyme kinetics, factors affecting activity proteins, recombinant expression and post-translation as related to bioreactors' issues	*QUESTIONS SET 1 HANDOUT*
3	Cellulases	
3	Ligninolytic enzymes	
3	Other major enzymes, eg: xylanases and amylases	*QUESTIONS SET 1 DUE* *QUESTIONS SET 2 HANDOUT*
3	Microbial growth: growth stages, medium formulations, pH, osmotic pressure	
3	Bioreactors: types and design	
3	Kinetics and microbiology of biological processes: Michaelis-Menten equation, inhibition kinetic models	*QUESTIONS SET 2 DUE* *QUESTIONS SET 3 HANDOUT*
3	Bioreactor control - sterilization and instrumentation	
3	Downstream processing	
3	Downstream processing	
3	Chemical analytical methods and microbiology techniques	*QUESTIONS SET 3 DUE*
3	Biotechnology regulations	
3	Final EXAM	

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: **Add** **Date Initiated:** **7/2014** **Effective Date:** ~~**Fall 2017**~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4243/6243	Sustainable Bioproducts	(3)

New or Modified Catalog Description:

(Prerequisite: SBP 3123 or consent of instructor). Three hours lecture. Expanding students' knowledge of bioproducts, manufacturing principles and processes according to various industrial fields and insights into new approaches and methods in bioproducts industries.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	8/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4243/6243 Sustainable Bioproducts and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Sustainable Bioproducts

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4243/6243. Sustainable Bioproducts (3 hours) (Prerequisite: SBP 3123 or consent of instructor). Three hours lecture. Expanding students' knowledge of bioproducts, manufacturing principles and processes according to various industrial fields and insights into new approaches and methods in bioproducts industries.

2. Detailed Course Outline

Syllabus is attached

Contact hours	Topic
3	Introduction to the course, syllabus, course outline and guidelines. Bioproducts feedstock resources: sources, composition, potential and environmental concerns.
3	Biorefinery: concept, process, products.
3	Life cycle analysis of fossil-based vs bio-based products.
3	Chemical and physical properties of natural polymers used for sustainable bioproducts (cellulose and its derivatives, pectin, xylan, starch, gums and chitin and chitosan).
3	Sustainable bioplastics: polylactic acid, polyhydroxyalkanoates, polycaprolactone and levulinic acid.
3	Sustainable packaging (I): introduction: rational and need for sustainable packaging, classification of biobased packaging materials, properties, biodegradability, challenges, and future trends.
3	Sustainable packaging (II): fiber-based packaging for food applications, thermoplastic composite packaging films, edible and antimicrobial food packaging, recycling of food packaging materials, legislation and certification of environmentally compatible packaging in US.
3	Review - Mid Term Exam
3	Sustainable composites: light weight composites used in automotive, building and space industries.
3	Sustainable textile bioproducts: fiber geometry and sources, natural vs regenerated fibers, antimicrobial textiles, healthcare and hygiene products, infection control and barrier materials, bandaging and pressure garments, wound care materials)
3	Bio-adhesives and bio-coatings: issues with conventional adhesives, foams, biopolyols and polyurethanes from biocellulosics (soy, lignin, glycerol)
3	Sustainable biomaterials for biomedical applications: biocompatibility and biodegradability; hydrogels, scaffolds for tissue regeneration, nanocellulose-based biosensors, biomineralization.
3	Pharmaceutical chemicals: bioactivity, antioxidant and antimicrobial properties, important agro and wood species, bark and leaf extraction, major pharmaceuticals compounds, approval and regulation (bioequivalence and therapeutic equivalence). ASSIGNMENT PAPERS DUE
3	Student presentations
3	Final exam

3. Method of Evaluation

Grading:

Midterm exam	30%
Assignment paper	20%
Assignment presentation	20%
Final exam	30%

Grading scale (on a 100 pt scale):

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work: The students will complete one assignment outside of lecture time. The assignment encompasses writing and presenting a paper on a bioproduct manufactured in the industries taught in this course, or other novel and emerging biomass applications. The assignments should NOT discuss traditional wood products covered in other courses (e.g. engineered wood composites, lumber, pulp etc.), and the students must consult the instructor about the choice of the bioproduct. Papers are to present selection of biomass raw materials, characteristics of the products, brief manufacturing process, benefits/drawbacks and trends.

4. Justification and Learning Outcomes

Justification:

This course will serve as the advanced course on the innovative and non-traditional bioproducts for the undergraduate students and graduate students in Sustainable Bioproducts. This course expands students' knowledge of bioproducts, manufacturing principles and processes according to various industrial fields. The course describes major properties that are to be considered for the production of bioproducts and gives insights into new approaches and methods in bioproducts industries. Innovative and emerging bioproducts industries, including bioenergy, will be described in detail in terms of their products, economic and environmental benefits, limitations as well as life cycle analysis.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
Upon completion of this course, students should have an understanding of:

- Importance and variety of bioproducts in human lives
- Benefits of bioproducts for environment
- LCA analysis methods
- Challenges and future trends in bioproduct industries

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience

This will be an elective for students in Sustainable Bioproducts. It will be strongly encouraged for those students interested in bioproducts and material science. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Agricultural Biological Engineering, PSS, Industrial Technology, material sciences and those interested in Mississippi industries.

7. Support

Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record

Dr. Dragica Jeremic Nikolic
Office: Franklin Center, Room 216
Office Phone Number: 662-325-0212
Email: djeremic@cfr.msstate.edu

9. Graduate Student Requirements

In addition to the topics that are to be covered in all of the assignments, as outlined above, graduate students must include an additional discussion on Life cycle analysis of the product. The students will calculate the inputs and outputs using available databases, if possible and compare to other non bioproducts of similar uses. The students are advised to select a bioproduct during early stages of the course in order to have enough time to familiarize themselves with the databases.

10. Planned Frequency

The course will initially be offered every other year in the fall semester.

11. Explanation of Any Duplication

There is no duplication of material in this course. This course serves as an advanced exploration of the non-traditional and innovative sustainable bioproducts that will be described in detail in terms of their products, economic and environmental benefits, limitations as well as life cycle

analysis. There are some upper division courses taught in SBP that will complement this course. Examples include SBP Lignocellulosic Biomass Chemistry, SBP 4133 Biorefinery Processes, and SBP 4153 Biomass Biological Conversion.

12. Method of Instruction Code

C= Lecture

13. Method of Delivery

F = Face to Face

14. Proposed C.I.P. Number

03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation

Sustainable Bioproducts

16. Proposed Semester Effective

Fall 2015

17. Other Appropriate Information

None

18. Proposal Contact Person

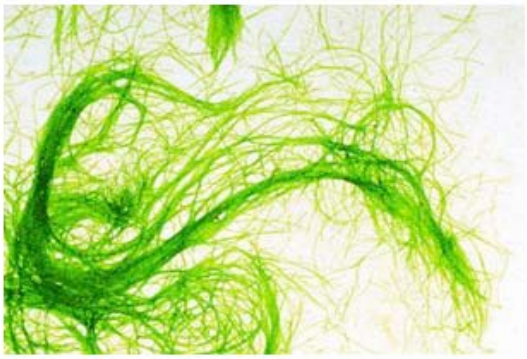
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

SUSTAINABLE BIOPRODUCTS

FALL 2017

SBP 4243/6243 (3 credits)

Dept. of Sustainable Bioproducts



CLASS HOURS: TBA

INSTRUCTOR:

Dr. Dragica Jeremic Nikolic
Telephone: 325-0212
Email: djeremic@cfr.msstate.edu
Office hours: Thu 9AM -12 PM or by appointment. Franklin Center 216

COURSE DESCRIPTION:

This course expands students' knowledge of bioproducts, manufacturing principles and processes according to various industrial fields. The course describes major properties that are to be considered for the production of bioproducts and gives insights into new approaches and methods in bioproducts industries.

Sustainable Bioproducts (SBP 4243/ 6243)
Syllabus

Course Learning Objectives:
Upon completion of this course, students should have an understanding of:

- Importance and variety of bioproducts in human lives
- Benefits of bioproducts for environment
- LCA analysis methods
- Challenges and future trends in bioproduct industries

Required Text:
There is no required textbook. A compendium of learning material will be provided to students in a form of handouts.

Prerequisites: SBP 3123

Methods of Instruction:
The instruction will be given in the form of classroom lectures. The students will complete one assignment outside of lecture time. The assignment encompasses writing and presenting a paper on a bioproduct of choice manufactured in the industries taught in this course, or other novel and emerging biomass applications. The assignments should NOT discuss traditional wood products covered in other courses (e.g. engineered wood composites, lumber, pulp etc.), and the students must consult the instructor about the choice of the bioproduct. Papers are to present selection of biomass raw materials, characteristics of the products, brief manufacturing process, benefits/drawbacks and trends.

The topics to be covered in the assignment:

1. Description of a bioproduct of choice – history and economics
2. Advantageous and disadvantageous properties of the raw materials
3. Manufacturing process – inputs and outputs
4. Properties of the manufactured products and comparable “non bioproduct”, if applicable
5. Current issues and future trends

Exams:
One midterm, and one final exam will be given during the term, and will cover the complete material taught up to the time of the exam.

Policy on Missed Assignments:
The students are expected to submit assignment papers during the designated class times. Each unexcused, late assignment submission will result in penalty of 10% of the assignment grade. Excuses will be accepted up to one week upon the missed due date.

Grading:

Midterm exam	30%
Assignment paper	20%
Assignment presentation	20%
Final exam	30%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Graduate Student Requirements:

In addition to the topics that are to be covered in all of the assignments, as outlined above, graduate students must include an additional discussion on Life cycle analysis of the product. The students will calculate the inputs and outputs using available databases, if possible and compare to other non bioproducts of similar uses. The students are advised to select a bioproduct during early stages of the course in order to have enough time to familiarize themselves with the databases.

Classroom Policies & Conduct:

The students are expected to attend the classes. Attendances will be taken during each class. Medical and personal excuses, as defined by the Academic Operating Policy and Procedure of the University, will be accepted up to two weeks upon the missed class. Each missed and unexcused class will carry a penalty of 1% of final grade. You will be responsible for contacting me as soon as possible following a missed class to arrange any make-up work or discuss a deadline extension due to circumstances beyond your control.

Detailed Course Outline: (This course will consist of 3 hours lecture each week)

Contact hours	Topic
3	Introduction to the course, syllabus, course outline and guidelines. Bioproducts feedstock resources: sources, composition, potential and environmental concerns.
3	Biorefinery: concept, process, products.
3	Life cycle analysis of fossil-based vs bio-based products.
3	Chemical and physical properties of natural polymers used for sustainable bioproducts (cellulose and its derivatives, pectin, xylan, starch, gums and chitin and chitosan).
3	Sustainable bioplastics: polylactic acid, polyhydroxyalkanoates, polycaprolactone and levulinic acid.
3	Sustainable packaging (I): introduction: rational and need for sustainable packaging, classification of biobased packaging materials, properties, biodegradability, challenges, and future trends.
3	Sustainable packaging (II): fiber-based packaging for food applications, thermoplastic composite packaging films, edible and antimicrobial food packaging, recycling of food packaging materials, legislation and certification of environmentally compatible packaging in US.
3	Review - Mid Term Exam
3	Sustainable composites: light weight composites used in automotive, building and space industries.
3	Sustainable textile bioproducts: fiber geometry and sources, natural vs regenerated fibers, antimicrobial textiles, healthcare and hygiene products, infection control and barrier materials, bandaging and pressure garments, wound care materials)
3	Bio-adhesives and bio-coatings: issues with conventional adhesives, foams, biopolyols and polyurethanes from biocellulosics (soy, lignin, glycerol)
3	Sustainable biomaterials for biomedical applications: biocompatibility and

	biodegradability; hydrogels, scaffolds for tissue regeneration, nanocellulose-based biosensors, biomineralization.
3	Pharmaceutical chemicals: bioactivity, antioxidant and antimicrobial properties, important agro and wood species, bark and leaf extraction, major pharmaceuticals compounds, approval and regulation (bioequivalence and therapeutic equivalence). ASSIGNMENT PAPERS DUE
3	Student presentations
3	Final exam

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

_____

Student name, printed **Student number (*NOT* SSN)**

_____

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4263/6263.	Strength Design of Furniture as Green Products	(3)

New or Modified Catalog Description:

(Prerequisite: SBP 3113 or consent of instructor). Two hours lecture. Three hours laboratory. General principles of structural analysis of furniture; strength design of members and joints; mechanical properties of environmentally preferable materials; design and analysis computer software; green and sustainable design certifications; and testing standards.

Approved:	*Date:*
Department Head	8/19/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/20/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4263/6263 Strength Design of Furniture as Green Product and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Strength Design of Furniture as Green Products

Department of Sustainable Bioproducts

1. Catalog Description
SBP 4263/6263. Strength Design of Furniture as Green Products. (3) (Prerequisite: SBP 3113 or consent of instructor). Two hours lecture. Three hours laboratory. General principles of structural analysis of furniture; strength design of members and joints; mechanical properties of environmentally preferable materials; design and analysis computer software; green and sustainable design certifications; and testing standards.

2. Detailed Course Outline Syllabus is attached

Week	Topic	Contact hours
1	Course introduction Review of principles of statics (concept of free-body diagrams) Review of principles of statics (concept of equilibrium) Lab – Mechanical and furniture testing lab Tour	 1 hour 1 hour 3 hours
2	Statics review (shear and moment diagrams) Review of concepts of mechanics of materials Normal stress and strain (axially loaded, compression, and tension) Lab – Design software Auto-CAD: Cabinet	 1 hour 1 hour 3 hours
3	Shear loaded members Beam members in bending Wood and wood composites as furniture construction materials Lab - Design software Auto-CAD: Cabinet	1 hour 1 hour 3 hours
4	Structure of wood and types of wood composites Physical properties; ASTM standards Strength properties related to furniture performance; test standards Lab – Fastener (Staples or Screws) Direct or Lateral Withdrawal Test	1 hour 1 hour 3 hours
5	Stiffness properties related to furniture performance Furniture performance test standards (GSA, BIFMA, etc) Internal force analysis on frames subjected to external loads (simple methods and FEM simulation methods) Lab – Structural analysis software ANSYS	 1 hour 1 hour 3 hours
6	Furniture strength design on members, material selection Allowable design stress; factor of safety Bending, tensile, and compression strength and stiffness properties of commonly used wood and wood composites Lab – Furniture Manufacturing Plant Tour	1 hour 1 hour 3 hours

7	Factors influencing material properties Joint types commonly used in furniture construction Joint strength analysis and evaluation tests Lab – Bending Test on Wood Composites (Particleboard or OSB)	 1 hour 1 hour 3 hours
8	Review Midterm exam Lab – CAM software, Master-CAM (Jewel Box Lid Project)	1 hour 1 hour 3 hours
9	Strength and stiffness capacities of different joint types Mechanical modeling of different types of joints Internal force analysis on mechanical fasteners in connections Lab – CNC Router Operation	 1 hour 1 hour 3 hours
10	Mechanical fastener types and their roles in joints Types of internal forces on fasteners Fastener mechanical properties and ASTM testing standards Lab – Bending Test on Joints	1 hour 1 hour 3 hours
11	Direct withdrawal capacity of single mechanical fastener such as screws, staples, from wood and wood composites; factors; prediction equations Lateral withdrawal capacity of single mechanical fastener in wood and wood composites; factors; prediction equations Lateral withdrawal capacities of multi-fasteners Lab – Design software Solid-work: Sofa Frame	1 hour 1 hour 3 hours
12	Strength and stiffness performance of adhesive bonded joints in wood and wood composites; factors; testing standards Furniture package design and testing standards Nondestructive testing methods Lab – Working on Design Project	1 hour 1 hour 3 hours
13	Green design concept Concept of design for six sigma Other topics per student request Lab – Working on Design Project	1 hour 1 hour 3 hours
14	Review Lab – Final project presentation	2 hours 3 hours
15	Final exam week	5 hours
	Total contact hours:	75 hours

3. Method of Evaluation

Grading (undergraduate students):

Problem assignments:	10% (1% each)
Pop-quizzes:	10% (2% each)
Lab reports:	20% (2.2% each)
Midterm exam:	15%
Final exam:	20%
Design project	25%

Grading (graduate students):

Problem assignments:	10% (1% each)
Pop-quizzes:	10% (2% each)
Lab reports:	20% (2.2% each)
Midterm exam:	15%
Final exam:	20%
Design project	15%
Review Paper	10%

Grading scale (on a 100 pt scale):

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work: The students will complete total of 10 assignments, 9 laboratory reports, and 1 final design project.

4. Justification and Learning Outcomes

Justification:

This course is structured with the intention for students to learn basic principles, process, and tools of strength analysis and design of furniture through in-class lectures and hands-on team projects. This will provide students with the opportunity to experience engineering design processes, and allow them to put into practice the basic engineering and design principles learned, and to develop problem-solving skills and team work concept. Therefore, after their graduation, they will be able to help furniture manufacturers to pre-engineer and re-engineer furniture products with an engineering driven process. All these efforts will help the industry to reduce the product design cycle and related costs, yield significant material cost saving, and improve product quality and durability. This will allow products to be sent to the market earlier and enhance the competitiveness of the US furniture industry.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Learning Outcomes:
Upon completion of this course, students will have an understanding of:

1. General principles of strength analysis and design of furniture;
2. Furniture performance test standards;
3. Important properties of materials for furniture construction and their test standards;
4. How to use CAD, CAA, and CAM computer software to design and analyze furniture;
5. Typical joint strength performance and mechanical fastener roles in connections;
6. Green concept considered in furniture strength design process.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This will be an elective for students in Sustainable Bioproducts. It will be strongly encouraged for those students interested in furniture manufacturing, design, design testing, mechanics, and testing standards. This course may also appeal to students in Agricultural Biological Engineering, Industrial Technology, Mechanical Engineering, materials science, and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record
Dr. Jilei Zhang
Office: Franklin Center, Room 113
Office Phone Number: 662-325-9413
jzhang@cfr.msstate.edu

9. Graduate Student Requirements – The graduate students must write an additional review paper related to his or her research interest from the topics learned from the class.

10. Planned Frequency
The course will be offered every other semester in the fall semester.

11. Explanation of Any Duplication
There is no duplication of material in this course. This course serves as a junior level introduction to the design of furniture as sustainable bioproducts.

12. Method of Instruction Code
B = Lecture/Lab

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Strength Design Furniture

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

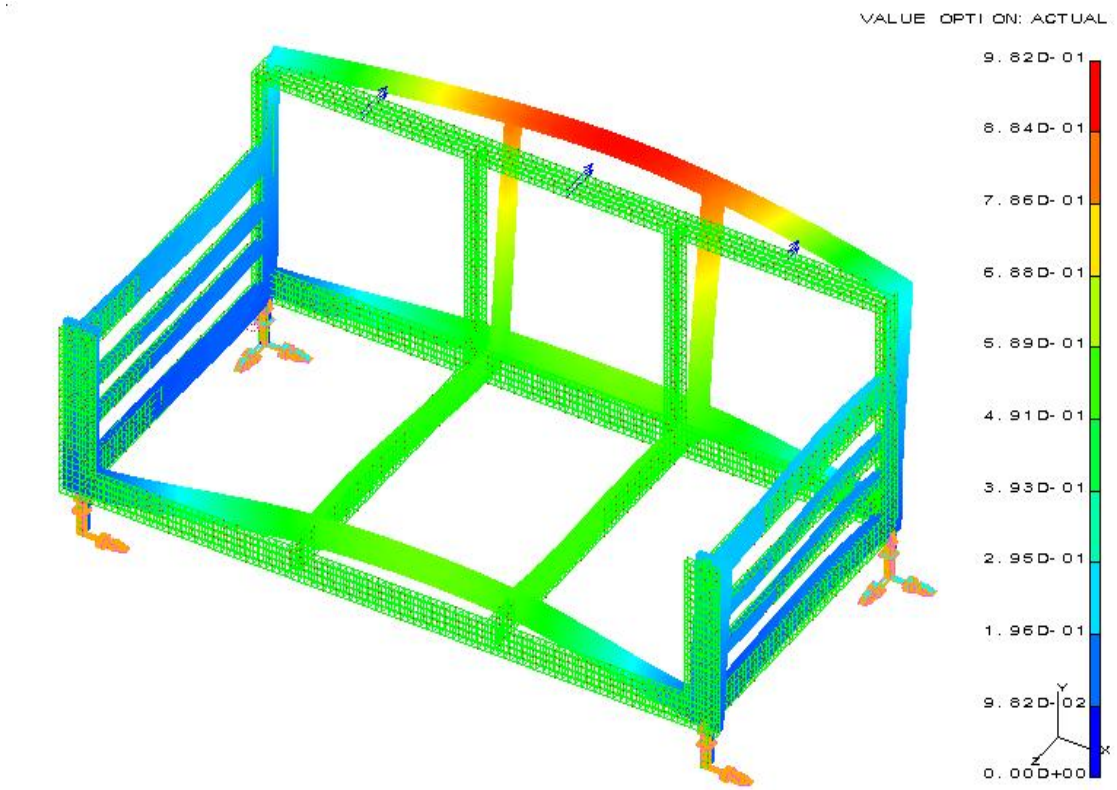
18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

Strength Design of Furniture as Green Products

SBP 4263/6263 (3 credits)

Dept. of Sustainable Bioproducts

FALL 2016



CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Jilei Zhang
Franklin Center, Room 113
Office Phone: 325-9413
jzhang@cfr.msstate.edu
Office Hours: 2:00 - 5:00 p.m., Friday

COURSE DESCRIPTION: This course is designed for students to learn basic concepts of strength analysis and design of furniture members and joints; important physical and mechanical properties of materials used for furniture constructions and testing standards for evaluating those properties; furniture performance testing standards; and CAD, CAA, and CAM computer software, and to experience of engineering design process through designing, analyzing, and fabricating of a furniture component or a piece of furniture.

Strength Design of Furniture as Green Products (SBP 4263/6263)
Syllabus

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. General principles of strength analysis and design of furniture;
2. Furniture performance test standards;
3. Important properties of materials for furniture construction and their test standards;
4. How to use CAD, CAA, and CAM computer software to design and analyze furniture;
5. Typical joint strength performance and mechanical fastener roles in connections;
6. Green concept considered in furniture strength design process.

Required Text: There is no required text for this class. Class information and reading materials will be posted on MyCourses.

Prerequisites: SBP 3113 (Mechanics and Physics) or consent of instructor.

Methods of Instruction: The course will be given in the form of two-hour lectures, three-hour lab per week, and in-class discussions. The students will complete 10 assignments, 9 laboratory reports, and 1 final design project report.

Exams: There are two exams in this course, a midterm and final.

Policy on Missed Assignments: The students are expected to submit problem assignments one week from the date assigned, and lab reports are due two weeks upon completion of the lab testing. No credit will be given after passing the due date.

Graduate Student Requirements: The graduate students must write an additional review paper related to his or her research interest from the topics learned from the class.

Grading (undergraduate students):

Problem assignments:	10% (1% each)
Pop-quizzes:	10% (2% each)
Lab reports:	20% (2.2% each)
Midterm exam:	15%
Final exam:	20%
Design project	25%

Grading (graduate students):

Problem assignments:	10% (1% each)
Pop-quizzes:	10% (2% each)
Lab reports:	20% (2.2% each)
Midterm exam:	15%
Final exam:	20%
Design project	15%
Review Paper	10%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct: The students are expected to attend the classes. Attendances will be taken during each class. Medical and personal excuses, as defined by the Academic Operating Policy and Procedure of the University, will be accepted up to one week upon the missed class. Each missed and unexcused class will carry a penalty of 1% of final grade.

Detailed Course Outline: (This course will consist of 2 hours lecture and 3 hours laboratory each week)

Week	Topic	Contact hours
1	Course introduction Review of principles of statics (concept of free-body diagrams) Review of principles of statics (concept of equilibrium) Lab – Mechanical and furniture testing lab Tour	 1 hour 1 hour 3 hours
2	Statics review (shear and moment diagrams) Review of concepts of mechanics of materials Normal stress and strain (axially loaded, compression, and tension) Lab – Design software Auto-CAD: Cabinet	 1 hour 1 hour 3 hours
3	Shear loaded members Beam members in bending Wood and wood composites as furniture construction materials Lab - Design software Auto-CAD: Cabinet	1 hour 1 hour 3 hours
4	Structure of wood and types of wood composites Physical properties; ASTM standards Strength properties related to furniture performance; test standards Lab – Fastener (Staples or Screws) Direct or Lateral Withdrawal Test	1 hour 1 hour 3 hours
5	Stiffness properties related to furniture performance Furniture performance test standards (GSA, BIFMA, etc) Internal force analysis on frames subjected to external loads (simple methods and FEM simulation methods) Lab – Structural analysis software ANSYS	 1 hour 1 hour 3 hours
6	Furniture strength design on members, material selection Allowable design stress; factor of safety Bending, tensile, and compression strength and stiffness properties of commonly used wood and wood composites Lab – Furniture Manufacturing Plant Tour	1 hour 1 hour 3 hours
7	Factors influencing material properties Joint types commonly used in furniture construction Joint strength analysis and evaluation tests Lab – Bending Test on Wood Composites (Particleboard or OSB)	 1 hour 1 hour 3 hours
8	Review Midterm exam Lab – CAM software, Master-CAM (Jewel Box Lid Project)	1 hour 1 hour 3 hours

9	Strength and stiffness capacities of different joint types Mechanical modeling of different types of joints Internal force analysis on mechanical fasteners in connections Lab – CNC Router Operation	 1 hour 1 hour 3 hours
10	Mechanical fastener types and their roles in joints Types of internal forces on fasteners Fastener mechanical properties and ASTM testing standards Lab – Bending Test on Joints	1 hour 1 hour 3 hours
11	Direct withdrawal capacity of single mechanical fastener such as screws, staples, from wood and wood composites; factors; prediction equations Lateral withdrawal capacity of single mechanical fastener in wood and wood composites; factors; prediction equations Lateral withdrawal capacities of multi-fasteners Lab – Design software Solid-work: Sofa Frame	1 hour 1 hour 3 hours
12	Strength and stiffness performance of adhesive bonded joints in wood and wood composites; factors; testing standards Furniture package design and testing standards Nondestructive testing methods Lab – Working on Design Project	1 hour 1 hour 3 hours
13	Green design concept Concept of design for six sigma Other topics per student request Lab – Working on Design Project	1 hour 1 hour 3 hours
14	Review Lab – Final project presentation	2 hours 3 hours
15	Final exam week	5 hours
	Total contact hours:	75 hours

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.
No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught if the classroom is not in Franklin Cimplex.

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Fall 2016~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4313/6313	Bioproducts and the Environment	(3)

New or Modified Catalog Description:

(Prerequisites: SBP 2012, 2123, and 3123 or consent of instructor). ~~(Prerequisites: None).~~ Three hours Lecture. An introduction to environmental topics and laws, environmental impact, and control technologies associated with emissions from diverse sustainable bioproducts industries, including global and national issues.

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4313/6313 Bioproducts and the Environment and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Bioproducts and the Environment

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4313/6313. Bioproducts and the Environment (3 hours). (Prerequisites: SBP 2012, 2123, and 3123 or consent of instructor). Three hours Lecture. An introduction to environmental topics and laws, environmental impact, and control technologies associated with emissions from diverse sustainable bioproducts industries, including global and national issues.

2. Detailed Course Outline

Syllabus is attached

This course will meet twice a week for 1.5 contact hours per lecture

Contact Hours	Topic
1 2	A sustainable environment – Syllabus, course outline, course expectations, Principles of sustainability, seven common themes of a sustainable environment
3	Sustainable bioproducts and global policy – Climate change, population, carbon sequestration, deforestation
3	SB and US policy – US trends, sustainable bioproducts, clearcutting, national forests vs parks, carbon storage in products
1.5 1.5	Environmental Certifications of Sustainable bioproducts and LCA – SFI. FSC, ISO 14001, others, implications Sustainable bioproducts & Environmental Laws – CAA, CWA, CERCLA, TRI, NEPA, PPA, FIFRA
1.5 1.5	Environmental Laws continued Class Presentations #1
3	Air contamination – Particulate matter – Toxic woods, sawdust, mold, health, controls
3	Air contamination – VOCs – where come from, what they are, smog, ozone, acid rain, health, impact, controls, off-gassing of formaldehyde
3	Properties of Soil and SB Soil Contamination – porosity, soil vapor, soil water, sorption, contaminant types, monitoring (TCLP), bioavailability
1.5 1.5	Properties of Soil and SB Soil Contamination- impacts, clean-up, control Class Presentations #2
3	Properties of Water and SB Water contamination – surface water versus groundwater, TMDL, monitoring assays (BOD, pH, TSS, etc.), bioassays
3	Properties of Water and SB Water contamination – contaminant types, NAPL, DNAPL, Impacts, clean-up, control
3	SB and solid waste residues – Types and volumes, impacts, clean-up, disposals
3	Environmental ethics

1.5	Class Discussions on Related topics in the news
1.5	Class presentations #3
3	Final
45	Total Contact Hours

3. METHOD OF EVALUATION

For undergraduate students:	
Assignments	40%
Exams	30% (15% each)
Quizzes	5%
Participation	5%
Final Exam	20%

For graduate students:	
Assignments	40%
Exams	20% (10% each)
Quizzes	5%
Participation	5%
Final Exam	23%
Presentations	15%

Grading scale:
For undergraduate students, grades will be assigned on a 100 point scale with 10% grade brackets.
90 – 100 = A
89 – 80 = B
79 – 70 = C
69 – 60 = D
Below 60 = F

For graduate students, grades will be assigned on a 108 point scale as below:
98 – 108 = A
97 – 88 = B
86 – 78 = C
76 – 68 = D
Below 68 = F

Out of Class Work:
There is no required text; however, there will be reading assignments posted with each section within MyCourses. These reading assignments will be made available within the course content. There will be weekly on-line assignments. Most of the assignment questions will come directly from the lectures. Time will be given in class each week to discuss assignments. There are no traditional in-class exams. Each student will write a comprehensive paper. This paper counts as the exams and final exam. Each student will choose a Sustainable Bioproduct industry. The topic must be approved by the instructor. The paper will cover all of the environmental components of the manufacturing process for that industry. At a given deadline, the student must turn in their paper discussing the course topics covered up to that point in time as it applies to their selected industry.

4. Justification and Learning Outcomes

Justification:
As global human population continues to increase and impact Earth, there will be increasing pressure on finite and renewable natural resources. This pressure may come from many sources including demand for sustenance and energy; disturbance, degradation, or loss of species and ecosystems; pollution; invasive species; soil, water, and air quality and quantity; and changing climate. To prepare students to work in the sustainable bioproducts field, they must understand, be able to converse, and be able to act on the many and diverse environmental issues that they will face during their careers.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Course learning objectives:
Upon completion of this course, students should have an understanding of:

1. Environmental policy and laws that govern the sustainable bioproducts industries,
2. Global and national issues relating to sustainable bioproducts and the environment,
3. Types of contamination that is emitted by these industries,
4. Environmental impact (including human) of these contaminants,
5. Common industrial control and disposal technologies for these contaminants
6. Positive actions that can help reduce, recycle or remediate the emissions
7. Ethics of environmental impacts of these contaminants
8. Application of concepts learned in class to a particular manufacturing process and synthesis of those concepts and processes into a comprehensive written format

5. Academic Misconduct
Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This will be a required course for students in Sustainable Bioproducts. It is necessary for students to understand the environmental aspects of manufacturing and processing. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Forestry, Agricultural Biological Engineering, PSS, Industrial Technology, Chemical Engineering, Biological Sciences, and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206
Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu

9. Graduate Student Requirements
Each graduate student will present three 10-15 min lectures on their comprehensive paper subject. Presentation grades will be based on coverage and knowledge of subject, oral communication skills, appropriate length of time, and overall appearance. Graduate students will also be graded on an increased scale (see syllabus).

10. Planned Frequency
The course will initially be offered every other year in the fall semester.

11. Explanation of Any Duplication
Bioproducts and Environment will provide an overview of the impact of the sustainable bioproducts and bioenergy industries on the environment. This course does not duplicate any other course offered on campus except portions of FP 4313/6313 Environmental Principles. FP 4313/6313 is being deleted from the curriculum and a course deletion form is part of this packet. The old FP 4313/6313 has been expanded into two courses. Bioproducts and Environment is the first of these two courses. There are some broad topics covered in Bioproducts and Environment that are covered in other courses on campus, but the topics in this course are focused on the bioproducts and bioenergy industries.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Bioproducts Environment

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person

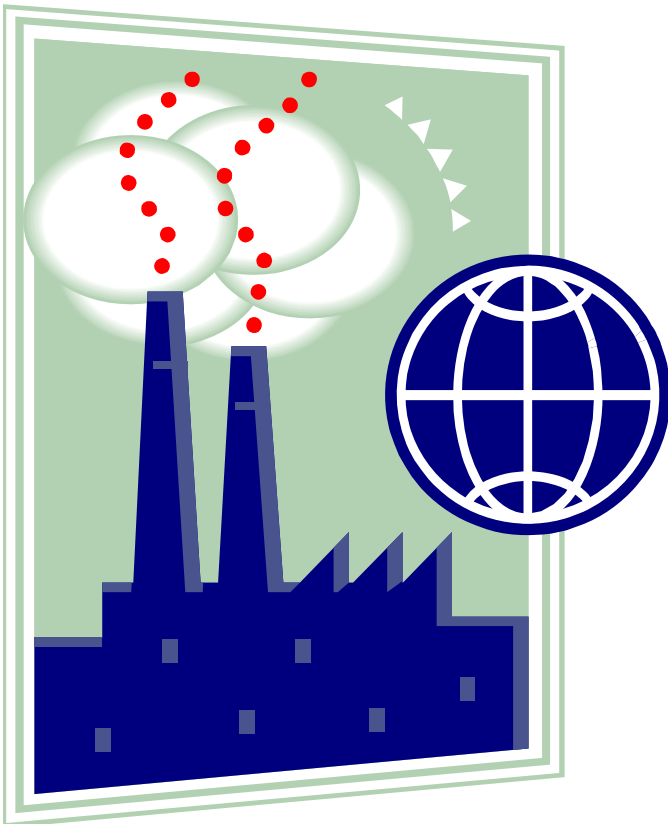
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

BIOPRODUCTS AND THE ENVIRONMENT

SBP 4313/6313 (3 credits)

Fall 2016

Dept. of Sustainable Bioproducts



CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206
Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu
Office hours: T 3-5 & W 8-10

COURSE DESCRIPTION: This course is designed to introduce students to the environmental topics and laws, environmental impact, and control technologies associated with various emissions from diverse sustainable bioproducts industries. Students will also be introduced to the current global and national issues relating to sustainable bioproducts and the environment. Topics will include principles of a sustainable environment, climate change, population growth, carbon sequestration, environmental product certifications, and environmental ethics. Emissions from sustainable bioproducts industries into air, soil and water will be examined in detail. Included are volatile organic compounds, particulate matter including sawdust and mold, high organic matter process wastewater, storm water runoff, sludge, and solid waste residues.

SYLLABUS
Bioproducts and the Environment (SBP 4313/6313)

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. Environmental policy and laws that govern the sustainable bioproducts industries,
2. Global and national issues relating to sustainable bioproducts and the environment,
3. Types of contamination that is emitted by these industries,
4. Environmental impact (including human) of these contaminants,
5. Common industrial control and disposal technologies for these contaminants
6. Positive actions that can help reduce, recycle or remediate the emissions
7. Ethics of environmental impacts of these contaminants
8. Application of concepts learned in class to a particular manufacturing process and synthesis of those concepts and processes into a comprehensive written format

Required Text: There is no required text; however, there will be reading assignments posted with each section within MyCourses. These reading assignments will be made available within the course content.

Methods of Instruction: Classroom lectures, discussions, presentations, out of class work
There will be weekly on-line assignments. Time will be given in class each week to discuss assignments.

Prerequisites: SBP 2012, 2123, and 3123 or consent of instructor

Exams and Assignments:
You are responsible for all material in the lecture and assigned readings.

All graded materials must be submitted through MyCourses or email.

Assignment and quiz questions will come from lectures and assigned readings. There will be assignment questions posted on-line every week (and some more than once per week) through the MyCourses site with a deadline listed for responses. These assignments will be graded. 40% of your total grade will come from these questions. Once the deadline for responding to a discussion question(s) has passed, see policy on missed assignments below. All questions are open notes and open book. You will be graded on the completeness, thoughtfulness and depth of your response. You may use the assigned readings and lecture material to help you answer the questions, but the answers must be in your own words. You may also discuss the questions with your classmates, but once again, when you sit down to answer the questions - the words must come from you.

There are two 'exams' and a 'final' for this class. Each student will write a comprehensive paper. This paper counts as your exams and final exam. Each student will choose a Sustainable Bioproduct industry. The topic must be approved by the instructor. The paper will cover all of the environmental components of the manufacturing process for that industry. At a given deadline, the student must turn in their paper discussing the course topics covered up to that point in time as it applies to their selected industry. You are required to address ALL topics discussed in this course (although you may add additional topics). Any comments or corrections made on the prior draft must be corrected on the subsequent draft. Papers should be of adequate length to cover all of the topics mentioned above, double spaced with no large tables or graphs occupying entire pages. Additional information on how to write this paper is available in the course content. The paper drafts are due on the dates listed in the schedule. No exceptions. Any paper turned in late will lose 10 points per day.

Plagiarism will not be tolerated.

MSU now has a site license for TurnItIn.com. I WILL submit your paper to this web site to search for plagiarism.

All students should read the academic honesty policy below and attached information. **Your paper should NOT consist of large blocks of quoted text**. Learn to appropriately paraphrase and cite.

PLAGIARISM POLICY: Plagiarism is using other people's ideas, words, graphs, charts, etc. without clearly acknowledging the source of the information. It is a form of stealing and cheating. It is important for a student to recognize and avoid plagiarism. I have attached information to assist you with identifying and avoiding plagiarism. Students may request access to TurnItIn.com so they may submit their own paper BEFORE you submit to me.

Policy on Missed Assignments: Weekly assignments will be due on the day specified in the syllabus and on the MyCourses class site. Any assignment turned in late will be docked 20% of the total grade for that assignment per day. Assignments turned in more than three days late will not be graded and receive a zero for that assignment.

Graduate Student Requirements:
Each graduate student will present three 10-15 min lectures on their comprehensive paper subject. Presentation grades will be based on coverage and knowledge of subject, oral communication skills, appropriate length of time, and overall appearance. Graduate students will also be graded on an increased scale (see below).

Grading:

For undergraduate students:

Assignments	40%
Exams	30% (15% each)
Quizzes	5%
Participation	5%
Final Exam	20%

For graduate students:

Assignments	40%
Exams	20% (10% each)
Quizzes	5%
Participation	5%
Final Exam	23%
Presentations	15%

Grading scale:
For undergraduate students, grades will be assigned on a 100 point scale with 10% grade brackets.
90 – 100 = A
89 – 80 = B
79 – 70 = C
69 – 60 = D
Below 60 = F

For graduate students, grades will be assigned on a 108 point scale as below:
98 – 108 = A
97 – 88 = B
86 – 78 = C
76 – 68 = D
Below 68 = F

Classroom Policies & Conduct:

Class attendance – there is no class attendance policy HOWEVER, discussion in the CLASS will count as part of your participation grade for that week. So if you do not attend class, then you cannot contribute to the in-class discussion and it will be reflected in your grade. There will be periodic quizzes given in class. These quizzes will be on the lecture and reading material assigned for that day. These quizzes and participation grade will each count as 5% of your total grade.

Detailed Course Outline: (This course will consist of 3 hours lecture each week)

Contact Hours	Topic
1 2	A sustainable environment – Syllabus, course outline, course expectations, Principles of sustainability, seven common themes of a sustainable environment
3	Sustainable bioproducts and global policy – Climate change, population, carbon sequestration, deforestation
3	SB and US policy – US trends, sustainable bioproducts, clearcutting, national forests vs parks, carbon storage in products
1.5 1.5	Environmental Certifications of Sustainable bioproducts and LCA – SFI. FSC, ISO 14001, others, implications Sustainable bioproducts & Environmental Laws – CAA, CWA, CERCLA, TRI, NEPA, PPA, FIFRA
1.5 1.5	Environmental Laws continued Class Presentations #1
3	Air contamination – Particulate matter – Toxic woods, sawdust, mold, health, controls
3	Air contamination – VOCs – where come from, what they are, smog, ozone, acid rain, health, impact, controls, off-gassing of formaldehyde
3	Properties of Soil and SB Soil Contamination – porosity, soil vapor, soil water, sorption, contaminant types, monitoring (TCLP), bioavailability
1.5 1.5	Properties of Soil and SB Soil Contamination- impacts, clean-up, control Class Presentations #2
3	Properties of Water and SB Water contamination – surface water versus groundwater, TMDL, monitoring assays (BOD, pH, TSS, etc.), bioassays
3	Properties of Water and SB Water contamination – contaminant types, NAPL, DNAPL, Impacts, clean-up, control
3	SB and solid waste residues – Types and volumes, impacts, clean-up, disposals
3	Environmental ethics
1.5 1.5	Class Discussions on Related topics in the news Class presentations #3
3	Final
45	Total Contact Hours

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2017~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4333/6333	Bioproducts and Environmental Biotechnology	(3)

New or Modified Catalog Description:

~~(Prerequisites: None). Three hours Lecture. Introduction to biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries, including wood preservatives, high organic process water, adhesives, resins and solvents.~~

(Prerequisites: SBP 2012, 2123, 3123, and 4313/6313 or consent of instructor). Three hours Lecture. Introduction to biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries, including wood preservatives, high organic process water, adhesives, resins and solvents

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY™
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4333/6333 Bioproducts and Environmental Biotechnology and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Bioproducts and Environmental Biotechnology

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4333/6333. Bioproducts and Environmental Biotechnology (3 hours). (Prerequisites: SBP 2012, 2123, 3123, and 4313/6313 or consent of instructor). Three hours Lecture. Introduction to biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries, including wood preservatives, high organic process water, adhesives, resins and solvents.

2. Detailed Course Outline

Syllabus is attached
This course will meet twice a week for 1.5 contact hours per lecture

Contact Hours	Topic
1 2	Introduction to SB and biotechnology - Syllabus, course outline, expectations, sustainable bioproducts and biotechnology – principles of biotechnology, xenobiotics, glossary of terms
1.5	Review of Microbes and Metabolism – bacteria & fungi, microbial metabolism, metabolic capacity, microbial diversity, microbial environment, aerobic vs anaerobic
1.5	Fundamentals of Bioremediation – bacteria - introduction, mineralization, co-metabolism, transformations, acclimation, environmental factors, bioavailability
0.5 1 1.5	Fundamentals of Bioremediation – continued Work on Team Project in class Fundamentals of Mycoremediation – fungi - introduction, mineralization, co-metabolism, transformations, acclimation, environmental factors, bioavailability
2 1	Fundamentals of Phytoremediation – phytoextraction, hyperaccumulation, rhizofiltration, rhizodegradation, phytovolatization, plants Class Presentations #1
3	Wood Protection - past problems and current solutions – organic preservatives, metal preservatives, health and environmental impact, microbial breakdown
1.5 1.5	Wood Protection – current solutions and practices – bioremediation, land farming, pump and treat bioreactors, natural attenuation, phytoremediation, air sparging Work on Team Project in class
3	Pulp and Paper - past problems and current solutions – chlorinated by-products, ECF. TCF, bleach alternatives, high BOD water, health and environmental impact Class Presentations #2
3	Pulp and Paper - current solutions and practices – enzymatic delignification, aerated ponds, constructed wetlands

3	Adhesives & Resins for composite SB – UF, PF, isocyanates and formaldehyde, health and environmental impact, biofiltration, composting, formaldehyde alternatives
1 2	Work on Team Project in class VOCs and Solvents – terpenes, drying emissions, furniture solvents, health and environmental impact, biofiltration, soil vapor extraction
1 2	Class Presentations #3 Bioenergy – thermo-conversions, biological conversions
1 2	Bioenergy - continued New Bioproducts (packaging, biomedical, textiles, biocoatings, bioplastics)
1 1 1	Work on Team Project in class Genetic Engineering Nanotechnology
1.5 1.5	Environmental Biotechnology and ethics Class presentations #4
3	Final Due
45	Total Contact Hours

3. METHOD OF EVALUATION

For undergraduate students:		For graduate students:	
Assignments	25%	Assignments	25%
Presentations	40%	Presentations	40%
Participation & leadership	5%	Participation & leadership	13%
Final Exam	30%	Final Exam	30%

Grading scale:
For undergraduate students, grades will be assigned on a 100 point scale with 10% grade brackets.
90 – 100 = A
89 – 80 = B
79 – 70 = C
69 – 60 = D
Below 60 = F

For graduate students, grades will be assigned on a 108 point scale as below:
98 – 108 = A
97 – 88 = B
86 – 78 = C
76 – 68 = D
Below 68 = F

Out of Class Work:
There is no required text; however, there will be reading assignments posted with each section within MyCourses. These reading assignments will be made available within the course content.

Assignment questions will come from lectures and assigned readings. There will be assignment questions posted on-line every week through the MyCourses site with a deadline listed for responses.

There is a team project required for this class. Teams will consist of groups of 2-4 students (depending on the size of the class). Groups will be chosen at the beginning of the semester and will work together for the duration of the class. Each group will be assigned one sustainable bioproducts industry. The team must compile information on this industry focused mainly on the use of environmental biotechnology within this industry. Each member of the team will be responsible for a subset of that industry. The team must orally present information on their industry to the class (see course outline for details). There are four presentations and ALL members of a team will speak at each presentation. There will be some time in class to work on team projects, but the expectation is that some out of class will also be required.

4. Justification and Learning Outcomes

Justification:
All industries generate waste products. In the past, many bioproducts industries dumped their waste legally into the environment, creating problems of soil and water contamination we are facing today. There are numerous examples in our own backyard (Kerr McGee in Columbus is an example). In addition, as new innovative sustainable bioproducts come on line and into the market, these industries must treat their wastes before entering the environment. There are many contaminants common to most bioproducts industries, and there are contaminants unique to a particular industry. To prepare students to work in the sustainable bioproducts field, they must understand, be able to converse, and be able to act on the many and diverse environmental contamination and discharge issues that they will face during their careers.

This course is designed to introduce students to the biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries. Topics will include core concepts of bioremediation, phytoremediation and mycoremediation and application of these to remediate wastes from organic wood preservatives, metal-based wood preservatives, high organic matter process water, adhesives, resins and solvents. Technologies include land-farming, bioreactors, pump-and-treat, air sparging, biofiltration, composting, and others. Students will also be introduced to the biotechnologies currently in use to enhance the manufacturing of different bioproducts. Topics include selective delignification, bio-pulping, and production of biofuels. Also discussed are topics such as environmental/biotechnology ethics, genetic engineering, and future biotechnologies such as nanotechnology.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from

which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Course learning objectives:

Upon completion of this course, students should have an understanding of:

1. Core concepts of bioremediation, mycoremediation, and phytoremediation,
2. Past problems and practices associated with environmental disposal of industrial wastes from the bioproducts industries,
3. Biotechnology applications for remediation of those past problems,
4. Current biotechnology solutions to mitigate waste disposal from bioproducts industries,
5. Current biotechnology applications to enhance production of bioproducts,
6. Ethical issues on biotechnology applications,
7. Application of concepts learned in class to a particular manufacturing process and team-building synthesis of those concepts and processes into a comprehensive oral and written format

5. Academic Misconduct
Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This is a required class for students in Sustainable Bioproducts. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories. This course may also appeal to students in Forestry, Agricultural Biological Engineering, PSS, Industrial Technology, Chemical Engineering, Biological Sciences, and those interested in Mississippi industries.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206
Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu

9. Graduate Student Requirements
There will be a higher expectation of all graduate students. Graduate students will also be required to work in teams and give presentations, but these teams will be composed of only graduate students. However, it is expected that graduate students will provide some leadership and assistance to the undergraduate students. Participation and leadership will be emphasized (see syllabus) and will constitute a higher percent of the total grade. Graduate students will also be graded on an increased scale (see syllabus).

10. Planned Frequency
The course will initially be offered every other year in the spring semester.

11. Explanation of Any Duplication
Bioproducts and Environmental Biotechnology is designed to introduce students to the biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries. Topics will include core concepts of bioremediation, phytoremediation and mycoremediation and application of these to remediate wastes from organic wood preservatives, metal-based wood preservatives, high organic matter process water, adhesives, resins and solvents. Technologies include land-farming, bioreactors, pump-and-treat, air sparging, biofiltration, composting, and others. Students will also be introduced to the biotechnologies currently in use to enhance the manufacturing of different bioproducts. Topics include selective delignification, bio-pulping, and production of biofuels. Also discussed are topics such as environmental/biotechnology ethics, genetic engineering, and future biotechnologies such as nanotechnology.

This course does duplicate some information from several other courses offered on campus. The field of bioremediation is extremely large and cannot be covered in one or two classes. FP 4313/6313 Environmental Principles is being deleted from the curriculum and a course deletion form is part of this packet. The old FP 4313/6313 has been expanded into two courses. Bioproducts and Environmental Biotechnology is the second of these two courses. Other courses on campus that cover some of these topics are BIO 4404 Environmental Microbiology and BIO 4673 Industrial Microbiology (same as CHE 4673). Environmental Microbiology does introduce students to the same principles of bioremediation as this course, but emphasizes the more common types of environmental contamination. Industrial Microbiology also covers the same principles of bioremediation, but emphasizes biocorrosion, biofouling, and other types of microbial impact. This course introduces students not only to bioremediation, but also phytoremediation and mycoremediation, and directs the contamination only to the bioproducts industries. It is possible some industries, such as pulp and paper, are covered in more than one class, but most of the industries and contamination covered in this class are not covered by these other courses.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Bioprod Environ Biotech

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

BIOPRODUCTS AND ENVIRONMENTAL BIOTECHNOLOGY

SBP 4333/6333 (3 credits)

Spring 2017

Dept. of Sustainable Bioproducts

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR:

Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206
Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu
Office hours: TBA

COURSE DESCRIPTION: This course is designed to introduce students to the biotechnological applications which remediate, minimize or eliminate environmental emissions from bioproduct industries. Topics will include core concepts of bioremediation, phytoremediation and mycoremediation and application of these to remediate wastes from organic wood preservatives, metal-based wood preservatives, high organic matter process water, adhesives, resins and solvents. Technologies include land-farming, bioreactors, pump-and-treat, air sparging, biofiltration, composting, and others. Students will also be introduced to the biotechnologies currently in use to enhance the manufacturing of different bioproducts. Topics include selective delignification, bio-pulping, and production of biofuels. Also discussed are topics such as environmental/biotechnology ethics, genetic engineering, and future biotechnologies such as nanotechnology.

SYLLABUS
Bioproducts and Environmental Biotechnology (SBP 4333/6333)

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. Core concepts of bioremediation, mycoremediation, and phytoremediation,
2. Past problems and practices associated with environmental disposal of industrial wastes from the bioproducts industries,
3. Biotechnology applications for remediation of those past problems,
4. Current biotechnology solutions to mitigate waste disposal from bioproducts industries,
5. Current biotechnology applications to enhance production of bioproducts,
6. Ethical issues on biotechnology applications,
7. Application of concepts learned in class to a particular manufacturing process and team-building synthesis of those concepts and processes into a comprehensive oral and written format

Required Text: There is no required text; however, there will be reading assignments posted with each section within MyCourses. These reading assignments will be made available within the course content.

Methods of Instruction: Classroom lectures, discussions, presentations, out of class reading
The class will meet three hours per week, however, several of those lecture periods will be set aside for work on the team-projects.

Prerequisites: SBP 2012, 2123, 3123, and 4313/6313 or consent of instructor

Exams and Assignments:

You are responsible for all material in the lecture and assigned readings.

All graded materials must be submitted through MyCourses or email.

Assignment questions will come from lectures and assigned readings. There will be assignment questions posted on-line every week through the MyCourses site with a deadline listed for responses. These assignments will be graded. 25% of your total grade will come from these assignments. Once the deadline for responding to a discussion question(s) has passed, see policy on missed assignments below. All questions are open notes and open book. You will be graded on the completeness, thoughtfulness and depth of your response. You may use the assigned readings and lecture material to help you answer the questions, but the answers must be in your own words. You may also discuss the questions with your classmates, but once again, when you sit down to answer the questions - the words must come from you.

There is a team project required for this class. Teams will consist of groups of 2-4 students (depending on the size of the class). Groups will be chosen at the beginning of the semester and will work together for the duration of the class. Each group will be assigned one sustainable bioproducts industry. The team must compile information on this industry focused mainly on the use of environmental biotechnology within this industry. Each member of the team will be responsible for a subset of that industry. The team must orally present information on their industry to the class (see course outline for details). There are four presentations and ALL members of a team will speak at each presentation. Presentations will be graded on the depth and relevance of information provided, team cooperation and coordination, and presentation organization. Each member of the team will also take turns being the team leader for that segment (see paragraph below on leadership). A more in depth explanation of the team project and

presentation expectations is provided on the MyCourses class web site. Each member of the team will receive an individual grade.

Leadership is defined many ways and it is difficult to access leadership in a classroom environment. Kouzes and Posner (2008) have listed five practices of leadership behavior and actions (and I paraphrase their words): 1) Lead by Example = effort, competence, assessable, responsible, 2) Inspire a Shared Vision = communication, enthusiasm, conviction, listening, 3) Enable Others to Act = shared responsibility, collaboration, trust, 4) Challenge the Process = improve, be creative, think outside the box, and 5) Encourage = recognize contributions, encourage others. Readings on leadership and leadership expectations is provided on the MyCourses class web site. Leadership will be evaluated by a rubric created by the MSU Day One Leadership program. This rubric will be posted on the MyCourses web site at the beginning of the course so you can see how points will be awarded. This rubric will be handed out after each presentation and evaluations will occur from the perspective of the individual leader for that presentation (self-evaluation), the team members (within the team), the other teams (outside the team) and the instructor's observations.

The only 'exam' for this class is a final and the final consists of a comprehensive paper written on the industry assigned to the team project. This paper counts as your exams and final exam. The paper will cover all of the environmental biotechnology components of the manufacturing process for that industry. The paper is an individual endeavor, not a team effort, and the writing must come from the individual and NOT from the team. You are required to address ALL topics discussed in this course (although you may add additional topics). Papers should be of adequate length to cover all of the topics mentioned above, double spaced with no large tables or graphs occupying entire pages. Additional information on how to write this paper is available in the course content. The paper drafts are due on the dates listed in the schedule. No exceptions. Any paper turned in late will lose 10 points per day.

Plagiarism will not be tolerated.

MSU now has a site license for TurnItIn.com. I WILL submit your paper to this web site to search for plagiarism.

All students should read the academic honesty policy below and attached information. **Your paper should NOT consist of large blocks of quoted text**. Learn to appropriately paraphrase and cite.

PLAGIARISM POLICY: Plagiarism is using other people's ideas, words, graphs, charts, etc. without clearly acknowledging the source of the information. It is a form of stealing and cheating. It is important for a student to recognize and avoid plagiarism. I have attached information to assist you with identifying and avoiding plagiarism. Students may request access to TurnItIn.com so they may submit their own paper BEFORE you submit to me.

Policy on Missed Assignments: Weekly assignments will be due on the day specified in the syllabus and on the MyCourses class site. Any assignment turned in late will be docked 20% of the total grade for that assignment per day. Assignments turned in more than three days late will not be graded and receive a zero for that assignment.

Graduate Student Requirements:
There will be a higher expectation of all graduate students. Graduate students will also be required to work in teams and give presentations, but these teams will be composed of only graduate students. However, it is expected that graduate students will provide some leadership and assistance to the undergraduate students. Participation and leadership will be emphasized and will constitute a higher percent of the total grade. Graduate students will also be graded on an increased scale (see below).

Grading:

For undergraduate students:		For graduate students:	
Assignments	25%	Assignments	25%
Presentations	40%	Presentations	40%
Participation & leadership	5%	Participation & leadership	13%
Final Exam	30%	Final Exam	30%

Grading scale:
For undergraduate students, grades will be assigned on a 100 point scale with 10% grade brackets.
90 – 100 = A
89 – 80 = B
79 – 70 = C
69 – 60 = D
Below 60 = F

For graduate students, grades will be assigned on a 108 point scale as below:
98 – 108 = A
97 – 88 = B
86 – 78 = C
76 – 68 = D
Below 68 = F

Classroom Policies & Conduct:
Class attendance – there is no class attendance policy HOWEVER; discussion in the CLASS will count as part of your participation grade for that week. So if you do not attend class, then you cannot contribute to the in-class discussion and it will be reflected in your grade.

Detailed Course Outline: (This course will consist of 3 hours lecture each week)

Contact Hours	Topic
1 2	Introduction to SB and biotechnology - Syllabus, course outline, expectations, sustainable bioproducts and biotechnology – principles of biotechnology, xenobiotics, glossary of terms
1.5 1.5	Review of Microbes and Metabolism – bacteria & fungi, microbial metabolism, metabolic capacity, microbial diversity, microbial environment, aerobic vs anaerobic Fundamentals of Bioremediation – bacteria - introduction, mineralization, co-metabolism, transformations, acclimation, environmental factors, bioavailability
0.5 1 1.5	Fundamentals of Bioremediation – continued Work on Team Project in class Fundamentals of Mycoremediation – fungi - introduction, mineralization, co-metabolism, transformations, acclimation, environmental factors, bioavailability
2 1	Fundamentals of Phytoremediation – phytoextraction, hyperaccumulation, rhizofiltration, rhizodegradation, phytovolatization, plants Class Presentations #1
3	Wood Protection - past problems and current solutions – organic preservatives, metal preservatives, health and environmental impact, microbial breakdown

1.5	Wood Protection – current solutions and practices – bioremediation, land farming, pump and treat bioreactors, natural attenuation, phytoremediation, air sparging
1.5	Work on Team Project in class
2	Pulp and Paper - past problems and current solutions – chlorinated by-products, ECF. TCF, bleach alternatives, high BOD water, health and environmental impact
1	Class Presentations #2
3	Pulp and Paper - current solutions and practices – enzymatic delignification, aerated ponds, constructed wetlands
3	Adhesives & Resins for composite SB – UF, PF, isocyanates and formaldehyde, health and environmental impact, biofiltration, composting, formaldehyde alternatives
1	Work on Team Project in class
2	VOCs and Solvents – terpenes, drying emissions, furniture solvents, health and environmental impact, biofiltration, soil vapor extraction
1	Class Presentations #3
2	Bioenergy – thermo-conversions, biological conversions
1	Bioenergy - continued
2	New Bioproducts (packaging, biomedical, textiles, biocoatings, bioplastics)
1	Work on Team Project in class
1	Genetic Engineering
1	Nanotechnology
1.5	Environmental Biotechnology and ethics
1.5	Class presentations #4
3	Final Due
45	Total Contact Hours

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident.
Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2018~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4443	Capstone Sustainable Bioproducts	(3)

New or Modified Catalog Description:

(Prerequisites: consent of instructor).
~~(Prerequisites: Senior standing in Sustainable Bioproducts program or consent of instructor).~~ Integration of knowledge from courses and current issues involving team projects that explore manufacturing problems or product design, emphasizing LCA, social/global perspectives, and problem solving

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	9/26/2014
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4443 Capstone Sustainable Bioproducts and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Capstone Sustainable Bioproducts

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4443 Capstone Sustainable Bioproducts: Three hours lecture. (Prerequisites: Consent of instructor). Integration of knowledge from courses and current issues involving team projects that explore manufacturing problems or product design, emphasizing LCA, social/global perspectives, and problem solving

2. Detailed Course Outline

Syllabus is attached

Week	Contact Hours	Topic
1	1	Introduction to the course; discussion of course goals and expectations; discussion of student portfolio; discussion of possible topics for first assignment
	1	Selection of teams; selection of team assignments; discussion of source material for projects
	1	Teams meet; outline of project and assignments to individual team members; outline of project
2	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
3	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
4	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
5	3	Team assignments due & oral presentations Assignment of new teams and team topics
6	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress; Student portfolio draft 1 due
7	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
8	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
9	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
10	3	Team assignments due & oral presentations Assignment of new teams and team topics
11	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress; Student portfolio draft 2 due

12	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
13	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
14	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
15	3	Team assignments due & oral presentations; student portfolios due

3. METHOD OF EVALUATION

There are no exams. Grading will be based on assigned projects and student portfolios as outlined below. Team participation and leadership will be graded by a rubric created by the MSU Day One Leadership program (see syllabus).

Grading:

3 - Written team assignments 13% each =	39%
3 - Oral presentations of assignments 12% each =	36%
1 – Student portfolio 15% =	15%
Team participation & Leadership=	10%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work:
There will be time in class for the teams to meet, discuss and write their projects. However, it is expected that much of the writing will be done out of class. Writing of the student portfolio will also be done out of class.

4. Justification and Learning Outcomes

Justification:
The mission of the Department of Sustainable Bioproducts is to enhance the intellectual, cultural, social, and professional development of its students by providing them with knowledge and skills needed to utilize and conserve diverse resources effectively. In this regard, the department's primary teaching responsibility is to provide high quality educational opportunities necessary to adequately prepare students for professional and scientific careers in sustainable bioproducts. This course is the capstone course for the program. It will require students to integrate knowledge from previous courses and current issues through team projects that explore manufacturing problems or product design, environmental, social and ethical concerns, and the future of new bioproducts.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, natural polymer composites, and other contemporary engineered products, as well as cellulose, chemicals, polymers, fuels, nanofibers, and medicines. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make traditional timber structural products last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

As this course is part of a new degree, enrollment in the first year may be low (estimated 5-6 students) but the expectation is that by the second year, enrollment will be up to 12-15 students, and by years 3 and 4 of the degree program, the enrollment will be between 15 and 20.

Course learning objectives:
Upon completion of this course, students will have:

- The ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined Sustainable Bioproducts problems,

- The ability to integrate knowledge to problems that require the application of principles and applied procedures,
- An understanding of the impact of sustainable bioproduct solutions in a societal and global context,
- An ability to function effectively as a member or leader of a team,
- An ability to critically assess, integrate, and synthesize appropriate literature and technical information, and to draw and communicate rational conclusions,
- An understanding of ethical responsibilities including a respect for diversity,
- An ability to write and apply written, oral, and graphical communication in both technical and non-technical environments

5. Academic Misconduct
Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.
Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
This course is required of all students in Sustainable Bioproducts. Sustainable Bioproducts students will be eligible to take this course in their last or next to last semester. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructor of Record
Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206

Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu

9. Graduate Student Requirements
Not applicable

10. Planned Frequency
The course will initially be offered every year in the spring semester.

11. Explanation of Any Duplication
There is no duplication of material in this course.

12. Method of Instruction Code
C= Lecture

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Capstone Sustain Bioprod

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

CAPSTONE SUSTAINABLE BIOPRODUCTS

SBP 4443 (3 credits)

SPRING 2018

Dept. of Sustainable Bioproducts

CLASS HOURS: **TBA**

CLASS LOCATION: **TBA**

INSTRUCTOR:

Dr. Susan V. Diehl
Office: Forest Products Laboratory, Building 3, Room 3206
Office Phone: 662-325-3101
Email: sdiehl@cfr.msstate.edu

COURSE DESCRIPTION: A capstone course which integrates knowledge from sustainable bioproducts course work and current issues. Team projects will explore manufacturing problems or product design, emphasizing life cycle analysis, social/global perspectives, ethics and problem solving exercises. Each student will also prepare a student portfolio.

Capstone Sustainable Bioproducts / SBP 4443
Syllabus

Course Learning Objectives:
Upon completion of this course, students will have:

- The ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined Sustainable Bioproducts problems,
- The ability to integrate knowledge to problems that require the application of principles and applied procedures,
- An understanding of the impact of sustainable bioproduct solutions in a societal and global context,
- An ability to function effectively as a member or leader of a team,
- An ability to critically assess, integrate, and synthesize appropriate literature and technical information, and to draw and communicate rational conclusions,
- An understanding of ethical responsibilities including a respect for diversity,
- An ability to write and apply written, oral, and graphical communication in both technical and non-technical environments

Required Text: There is no required text; however, there will be information on assigned topics posted within MyCourses.

Prerequisites: Consent of instructor.

Methods of Instruction: Classroom discussions, team assignments, written and oral presentations, out of class work

Exams: There are no exams. Grading will be based on assigned projects and student portfolios as outlined below.

Policy on Missed Assignments:
Team assignments, written and oral, and student portfolios will be due on the day specified in the syllabus and on the MyCourses class site. Any assignment turned in late will be docked 20% of the total grade for that assignment per day. Assignments turned in more than three days late will not be graded and receive a zero for that assignment. Grades and missed assignments will be based on BOTH completion of the assignment by the team and each individual member of the team.

Grading:

3 - Written team assignments 13% each =	39%
3 - Oral presentations of assignments 12% each =	36%
1 – Student portfolio 15% =	15%
Team participation & Leadership=	10%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Classroom Policies & Conduct:

There will be several team projects in this class. As part of a team, you will be expected to fully contribute to the assignments. Part of your grade will be based on this participation and leadership. It is expected that the team will discuss all aspects of the project with each other, however, when you sit down to write-up your project, each person must write their own paper. Your paper must be in your words. You cannot copy from your team members or anyone else in the class.

Plagiarism will not be tolerated.

MSU now has a site license for TurnItIn.com. I WILL submit your paper to this web site to search for plagiarism.

All students should read the academic honesty policy below and attached information. **Your paper should NOT consist of large blocks of quoted text**. Learn to appropriately paraphrase and cite.

PLAGIARISM POLICY: Plagiarism is using other people's ideas, words, graphs, charts, etc. without clearly acknowledging the source of the information. It is a form of stealing and cheating. It is important for a student to recognize and avoid plagiarism. I have attached information to assist you with identifying and avoiding plagiarism. Students may request access to TurnItIn.com so they may submit their own paper BEFORE you submit to me.

Detailed Course Outline:

Week	Contact Hours	Topic
1	1 1 1	Introduction to the course; discussion of course goals and expectations; discussion of student portfolio; discussion of possible topics for first assignment Selection of teams; selection of team assignments; discussion of source material for projects Teams meet; outline of project and assignments to individual team members; outline of project
2	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
3	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
4	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
5	3	Team assignments due & oral presentations Assignment of new teams and team topics
6	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress; Student portfolio draft 1 due
7	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
8	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
9	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
10	3	Team assignments due & oral presentations Assignment of new teams and team topics

11	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress; Student portfolio draft 2 due
12	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
13	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
14	3	Teams meet and work on project; instructor will meet with each team to discuss member contributions and team progress
15	3	Team assignments due & oral presentations; student portfolios due

Team Projects:

There will be three team projects. The first will be on a traditional bioproduct, such as plywood, OSB, particleboard, etc. The second will be on a bioproduct that has created controversy in the news, such as treated CCA lumber or creosote-treated railroad ties (Kerr-Magee). The third will be on a new sustainable bioproduct, such as packaging, textiles, or biomedical applications. Each team will research their assigned bioproduct and produce both a written and oral report. No two teams will have the same bioproduct for any given assignment. Teams will be assigned by the instructor and will change for each assignment. There WILL be time in class each week for teams to meet and discuss their contributions to the project and progress. Team leaders will change such that everyone has an opportunity to be a leader.

The first report must address the following:

- Raw material source
- Manufacturing steps – in detail
- Life cycle analysis data of inputs and outputs
- Environmental consequences – good and bad – of bioproduct
- Social consequences – good and bad – of bioproduct
- Global consequences – good and bad – of bioproduct
- Alternative solutions or suggestions to consequences of bioproduct – including economics

The second report must address the following:

- Bioproduct and controversy in the news related to bioproduct
- Pros and cons of product use
- Environmental impact of product
- Societal impact of product
- Response of company(ies) to controversy
- Alternative solutions or suggestions to consequences of bioproduct
- Ethics of product and company in relation to controversy
- MUST provide ALL sides and opinions on this product and controversy

The third report must address the following:

- Raw material source
- Manufacturing steps
- Market for product – what does it compete against?
- Environmental consequences – good and bad – of bioproduct
- Social consequences – good and bad – of bioproduct
- Global consequences – good and bad – of bioproduct
- Alternative solutions or suggestions to consequences of bioproduct
- Future outlook of product

More detail will be provided on the MyCourses web site as well as suggestions to help you find the information you will need.

For the written assignment, each person of a team will write a complete report covering all of the required topics. The report must be in your own words; you may discuss but not copy from members of your team.
For the oral presentation, EACH person of the team must present one section of the project. Everyone speaks. More information on the oral presentation will be provided in class and on the MyCourses course web site. In addition, you will critically critique the oral presentations of the other teams. This critique will be turned into the instructor. This critique must be an honest and constructive critique and will count as a portion of your oral grade.

Leadership and Participation:

Leadership is defined many ways and it is difficult to access leadership in a classroom environment. Kouzes and Posner (2008) have listed five practices of leadership behavior and actions (and I paraphrase their words): 1) Lead by Example = effort, competence, assessable, responsible, 2) Inspire a Shared Vision = communication, enthusiasm, conviction, listening, 3) Enable Others to Act = shared responsibility, collaboration, trust, 4) Challenge the Process = improve, be creative, think outside the box, and 5) Encourage = recognize contributions, encourage others. Readings on leadership and leadership expectations is provided on the MyCourses class web site. Leadership will be evaluated by a rubric created by the MSU Day One Leadership program. This rubric will be posted on the MyCourses web site at the beginning of the course so you can see how points will be awarded. This rubric will be handed out after each project completion and evaluations will occur from the perspective of the individual leader for that presentation (self-evaluation), the team members (within the team), the other teams (outside the team) and the instructor's observations.

Student Portfolios:

Each student will individually develop a portfolio. Although portfolios are often associated with art or architecture where you display your designs, in this case a student portfolio is a synopsis and reflection of your academic career. Your student portfolio will include more than just a standard resume. You will be asked to discuss, from your perspective, a series of questions relating to the body of knowledge you gained from your prior coursework in this degree. Some of these questions will be directed toward career preparation, others will be directed toward the material sciences, while others will be directed toward current issues. The reflective questions you will be asked to address in your portfolio will roughly follow the discussion topics in the written and oral portion of this course. Drafts of the portfolio will be required at different times during the class and due dates will be listed on the MyCourses site and in the syllabus. More information on the student portfolio requirements will be provided on the MyCourses web site.

These portfolios will be made available to select faculty and the department head of Sustainable Bioproducts to use in assessment of the program.

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

> *"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."*
> Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Forest Resources **Department:** Sustainable Bioproducts

Contact Person: Rubin Shmulsky **Phone:** 5-2116 **E-mail:** rshmulsky@cfr.msstate.edu

Nature of Change: Add **Date Initiated:** 7/2014 **Effective Date:** ~~Spring 2018~~ FALL 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
SBP	4450	Undergraduate Research in Sustainable Bioproducts	(~~variable~~) 1 - 6 hours

New or Modified Catalog Description:

~~(Prerequisite: Senior standing in the Department of Sustainable Bioproducts). Variable Hours Laboratory. This course is designed to introduce senior level students to the concepts of independent and original research~~

(Prerequisite: Senior standing and consent of instructor). 1-6 Variable Hours laboratory. This course is designed to introduce senior level students to the concepts of independent and original research. (Course limited to two offerings).

Approved:	*Date:*
Department Head	8/14/14
Chair, College or School Curriculum Committee	
Dean of College or School	9/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE
UNIVERSITY™
Department of Sustainable Bioproducts

August 12, 2014

University Committee on Courses and Curricula
Mississippi State University

To Whom It May Concern:

The Curriculum Committee of the Department of Sustainable Bioproducts in the College of Forest Resources has reviewed the proposal to create the new course SBP 4450 Undergraduate Research and has voted to fully endorse this course.

Thank you for considering the support of this course addition proposal.

Sincerely;

Dr. H. Michael Barnes, Professor
Chair, Sustainable Bioproducts Curriculum Committee

Box 9820 • Mississippi State, MS 39762-9820 • Ph. (662) 325-2116 • fax (662) 325-8126 • www.cfr.msstate.edu

COURSE ADDITION

Undergraduate Research in Sustainable Bioproducts

Department of Sustainable Bioproducts

1. Catalog Description

SBP 4450. Undergraduate Research in Sustainable Bioproducts (1-6 Hours) (Prerequisite: Senior standing and consent of instructor). 1-6 Variable Hours laboratory. This course is designed to introduce senior level students to the concepts of independent and original research. (Course limited to two offerings).

2. Detailed Course Outline

Below is an estimated course outline. This will vary based on number of hours.

Each course research hour will be the equivalent of three hours of laboratory time.

Week	Topic
1	Discuss Research with Professor and begin to develop a Research Plan
2	Develop a Research Plan & Introduction to the Rules of the Laboratory including Safety
3	Conduct research & Training in maintaining a Laboratory Notebook
4	Conduct research
5	Conduct research & prepare draft of Introduction, Objectives and Hypotheses for Research Paper
6	Conduct research
7	Conduct research
8	Conduct research & prepare draft of Methods for Research Paper
9	Conduct research
10	Conduct research
11	Conduct research & begin to analyze Results for Research Paper
12	Conduct research & analyze Results for Research Paper
13	Conduct research & develop Conclusions for Research Paper
14	Finish research and prepare final version of Research Paper and develop Presentation
15	Present results to departmental faculty and students

3. Method of Evaluation

The student will be evaluated on the basis of his/her research plan, quality of research, research productivity, research report and verbal and visual presentation. Students who do not adhere to the set times allotted in the laboratory for their research will lose points in the Research Skills and Activity portion of their grade. Each individual instructor will establish the penalties and the student will be informed of this policy at the beginning of the semester.

Grading:

Research plan	10%
Research skills and activity	30%
Research report	40%
Verbal and visual presentation	20%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Out of Class Work: Out of class work will consist of reading assignments to familiarize the student with the subject matter associated with their research.

4. Justification and Learning Outcomes

Justification:
This course is designed to introduce senior level students to the concepts of independent research. The student will select a faculty member that is knowledgeable about research in an area of his/her interest. The student will prepare a research work plan, carry out research, write a report and make an oral presentation to the departmental faculty. Many students are keenly interested in learning to do research in order to better prepare them for advanced professional or graduate degrees. The department has a long history of employing undergraduates to assist in faculty research. A majority of these undergraduates have gone on to professional or graduate school. This course formalizes this practice into a structured course.

The state of Mississippi is blessed with ample forests and forest-conversion facilities. The state of Mississippi is in the heart of the nation's wood basket. Across the USA, university-level Wood Science and Forest Products programs are evolving. The national trend is that of a visible broadening focus toward sustainability, conservation, renewable resources, and environmental stewardship. Historically, these concepts have been thoroughly embedded in forest products and wood science programs. Now, however, they are front and center. The national and international pool of faculty expertise is also changing. As a reflection of the changes in college-level programs and the trained professionals that they are producing, that is, the talent pool from which the Department pulls its new faculty hires, it is imperative that this department change. The pool of terminal degree holding trained professionals includes an increasing amount of people trained in bioproducts, bioenergy, sustainable and renewable resources, and allied fields.

Contemporary students covet and seek environmentally friendly and socially responsible choices and actions. Universally, college-level students have aspirations of not only making a living but also of making a difference. They desire ways and means of conserving natural resources for future generations while balancing the immediate needs for economic activity, environmental

protection, and social betterment. To help capture their interest, it is important that this profession be advertised and marketed truthfully and constructively.

The Sustainable Bioproducts field is inherently multidisciplinary. It broadly encompasses wood and non-wood hybrid composites, agriculture and wood fiberboards, wood polymer composites, and other contemporary engineered products. These products seek to extend forest and natural resources by utilizing relatively low value trees and agricultural residues. Furthermore, the discipline seeks to make housing and other structures last longer via preservative treatments and better construction techniques. As such the student in Sustainable Bioproducts will be able to understand the relationships among the biological, physical, mechanical and chemical properties of sustainable bioproducts and apply that knowledge to technology problems as well as understand the impact of sustainable bioproduct solutions in a societal and global context.

Stakeholders of the Department are supportive of this change. Jobs are now available in many fields, yet educated students are not available. In addition to traditional industries such as softwood and hardwood lumber, plywood, oriented strandboard, wood treating, and laminated beams, the department stakeholders and advisory board includes bioenergy production firms, transportation and energy-towing, agricultural fiber producers, county-level economic development professionals, and federal agency representatives.

Enrollment in this course will be on an individual student and faculty member basis. Thus enrollment is expected to be relatively low, however, once the new degree program is underway, it is anticipated that the enrollment will be between 5-8 students.

Learning Outcomes:
Upon completion of this course, students should have an understanding of:

1. How to design a small research experiment,
2. How to perform the laboratory tests and techniques needed to do the research as well as understand the concepts behind the tests and techniques,
3. How to operate the equipment needed to do the research,
4. How to create and maintain a laboratory research notebook,
5. How to work as part of a research team,
6. How to work in a laboratory environment safely,
7. How to analyze and present the results of the research.

5. Academic Misconduct

Students are expected to conduct themselves in accordance with the policies and procedures set forth by the University and the College of Forest Resources and to adhere to the MSU Honor Code: "*As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.*"

Details may be found in the CFR Student Handbook. Cheating will not be tolerated and will result in automatic dismissal from the course with a grade of F.

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.

All students must sign and return to the instructor the Academic Honor Code statement on the last page of the attached syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

6. Target Audience
Sustainable Bioproducts students with senior standing will be eligible to take this course. Students in our program will likely have career interests into fields such as federal environmental protection agency, policy makers, state's departments of environmental quality / protection, public and private forest products manufacturing firms, traders and wholesalers, non-governmental organizations, graduate and post-secondary education and training institutions, federal laboratories.

7. Support
Please see attached letter of support from the department curriculum committee for Sustainable Bioproducts. Adequate resources are available to support this course.

8. Instructors of Record
Any faculty member in the Department of Sustainable Bioproducts

9. Graduate Student Requirements – Not Applicable

10. Planned Frequency
The course will be offered any semester.

11. Explanation of Any Duplication
There is no duplication of material in this course.

12. Method of Instruction Code
L = Laboratory

13. Method of Delivery
F = Face to Face

14. Proposed C.I.P. Number
03.0101 Natural Resources/Conservation

15. Proposed 24-Character Abbreviation
Undergrad Research in SBP

16. Proposed Semester Effective
Fall 2015

17. Other Appropriate Information
None

18. Proposal Contact Person
Dr. Rubin Shmulsky, Ph.D.
Professor and Department Head
Department of Sustainable Bioproducts (formerly Forest Products)
Associate Director, Sustainable Energy Research Center
Email: rshmulsky@cfr.msstate.edu
Phone: 662-325-2116 / Fax: 662-325-8986

UNDERGRADUATE RESEARCH IN SUSTAINABLE BIOPRODUCTS

SBP 4450 (Variable credits)

Dept. of Sustainable Bioproducts

CLASS HOURS: TBA

CLASS LOCATION: TBA

INSTRUCTOR: Any faculty in the Department of Sustainable Bioproducts

COURSE DESCRIPTION: This course is designed to introduce senior level students to the concepts of independent research. The student will select a faculty member that is knowledgeable about research in an area of his/her interest. The student will prepare a research work plan, carry out research, write a report and make an oral presentation to the SBP faculty.

Undergraduate Research in Sustainable Bioproducts (SBP 4450)
Syllabus

Course Learning Objectives:

Upon completion of this course, students should have an understanding of:

1. How to design a small research experiment,
2. How to perform the laboratory tests and techniques needed to do the research as well as understand the concepts behind the tests and techniques,
3. How to operate the equipment needed to do the research,
4. How to create and maintain a laboratory research notebook
5. How to work as part of a research team,
6. How to work in a laboratory environment safely,
7. How to analyze and present the results of the research.

Required Text: None

Prerequisites: Senior standing and consent of instructor

Methods of Instruction: This is a laboratory-based course, although it is expected that the student and instructor will meet face-to-face on a weekly basis to discuss the research.

Evaluation and Missing Assignments:

The student will be evaluated on the basis of his/her research plan, quality of research, research productivity, research report and verbal and visual presentation. Students who do not adhere to the set times allotted in the laboratory for their research will lose points in the Research Skills and Activity portion of their grade. Each individual instructor will establish the penalties and the student will be informed of this policy at the beginning of the semester.

Grading:

Research plan	10%
Research skills and activity	30%
Research report	40%
Verbal and visual presentation	20%

Grading scale:

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	below 60%

Laboratory Policies & Conduct:

All students will be trained in the appropriate 'Rules of the Laboratory' in which they are working as well as all 'Safe Laboratory Practices' for their research. Failure to adhere to these Rules and Practices will result in a 'warning' for first offense; a drop in letter grade for a second offense; and a zero in the class and removal from the laboratory for a third offense. Safety and good laboratory practices are priorities for all students, faculty and staff of the Department of Sustainable Bioproducts and adherence to these rules are strictly enforced.

Detailed Course Outline:

Week	Topic
1	Discuss Research with Professor and Begin to Develop a research Plan
2	Develop a Research Plan & Introduction to the Rules of the Laboratory including Safety
3	Conduct Research & Training in Maintaining a Laboratory Notebook
4	Conduct Research
5	Conduct Research & Prepare draft of Introduction, Objectives and Hypotheses for Research Paper
6	Conduct Research
7	Conduct Research
8	Conduct Research & Prepare draft of Methods for Research Paper
9	Conduct Research
10	Conduct Research
11	Conduct Research & Begin to Analyze Results for Research Paper
12	Conduct Research & Analyze Results for Research Paper
13	Conduct Research & Develop Conclusions for Research Paper
14	Finish Research and Prepare Final version of Research Paper and Develop Presentation
15	Present results to SBP faculty and students

Code of behavior:

Students are required to follow MSU code of honor and integrity as outlined in MSU Academic Operating Policy and Procedure manual. Policies and procedures regarding student behavior are outlined under University Policies Relating to Students at http://www.msstate.edu/web/security/student_policies.html.
All students must sign and return to the instructor the Academic Honor Code statement on the last page of this syllabus.

No grades will be assigned in this course for students who fail to sign and return this form to the instructor.

Emergency Procedures:

In case of tornado or other weather related situations, students must quickly move to the Room # 117 in the Franklin Complex. Will provide for where course is taught

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per MSU Student Support Services policy. Students seeking accommodations on the basis of disability or special need must identify themselves to the office of Student Support Services to verify eligibility. If you have a documented disability that requires academic accommodations, please notify the instructor as soon as possible. In order to receive accommodations in this course, you must provide a Letter of Accommodation from Student Support Services for coordination of campus disability services available to students with disabilities. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services.

ACADEMIC HONOR CODE

Mississippi State has approved the following Honor Code. Upon accepting admission to MSU, you assume a responsibility to uphold the MSU Honor Code.

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Mississippi State University Student Honor Co

The MSU 'Rules Pertaining to the Honor Code' states: "Misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research or other academic work. It does not include honest error or honest differences in interpretations or judgments of data. Mississippi State University students are responsible for authenticating any assignment submitted to an instructor or graduate committee, excluding examinations. If asked, a student must be able to produce proof that the assignment submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor or graduate committee request it, is sufficient grounds to initiate an academic dishonesty case."

Students are encouraged to review the MSU Academic Misconduct Policy available on the following web page http://www.honorcode.msstate.edu/policy/.
From the Honor Code, academic dishonesty includes but is not limited to:
1. Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.
2. Fabrication: Making up data or results and recording or reporting them.
3. Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research or academic work is not accurately represented in the research or work record.
4. Multiple Submissions: The submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.
5. Plagiarism: Appropriation of another person's ideas, results, or words without giving appropriate credit.
6. Complicity: Intentionally or knowingly helping, another to commit an act of academic dishonesty.
7. Violation of Departmental or College Rules: Students may not violate any announced departmental or college rule relating to academic matters including, but not limited to, abuse or misuse of computer access or information in any academic exercise.

SANCTIONS: When it is determined by the Honor Code Council or a faculty member that a student has violated the MSU Honor Code, ***the normal sanction assigned for a first offense will be an "XF" for the course***, probation, and a requirement to complete the Academic Integrity Intervention Program. The Honor Code Council or faculty member will only impose a lesser grade sanction (a lowered course grade rather than an F) in exceptional circumstances, such as where the assignment involved is a minor part of the final course grade. The dishonesty notation ("X"), probation and intervention program will be required with all grade sanctions. The Honor Code Council has the authority to remove a student from the University, even for first offenses. Decisions by the Honor Code Council Hearing Panels are binding on all parties.

By signing below, the student acknowledges that s/he has read and understands the University policy on Academic Misconduct. Further, the student acknowledges that any act that may be interpreted as misconduct will be subject to action in accordance with the policy. The act does not necessarily have to be a willful and deliberate violation of the University policy in order for disciplinary actions to be initiated. Thus, it is in the student's best interest to act in such a manner as to avoid creating or becoming part of a situation in which the appearance of misconduct is evident. Finally, the student understands that it is his/her responsibility to inquire with the instructor if a situation arises which could be interpreted by the instructor or others as a violation of the policy on misconduct.

Student name, printed **Student number (*NOT* SSN)**

Student signature **Date**

No grades will be assigned in this course for students who fail to sign and return this form to the instructor

APPROVAL FORM FOR

COURSES

MISSISSIPPISTATEUNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: College of Veterinary Medicine **Department:** Pathobiology/Population Medicine

Contact Person: Floyd D. Wilson, P O Box 97813, Pearl, MS, E-mail: fwilson@mvrdl.msstate.edu

College/Department Contact: Barbara E. Perrigin, Mail Stop 9825, Phone: 325-1417, Email: bep2@msstate.edu

Nature of Change: ADD **Date Initiated:** 4-14-13 **Effective Date:** Spring 2015

Current Listing in Catalog:

Article I.	SYMBOL	NUMBER	TITLE	CREDIT HOURS ( )

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
CVM	8033	Poultry Histopathology	(3)

New or Modified Catalog Description:

Microscopic anatomy and diagnosis of major poultry diseases. Tissues histologic reactions to injury from physical-mechanical, genetic-based, metabolic, viral, bacterial and protozoan insults. Writing histopathology reports.

Approved: ***Date:***

11/5/14
William Epperson, Head, Department of Pathobiology and Population Medicine

11/6/14
Mark L. Lawrence, Associate Dean, CVM

11/6/14
R. H. "Hart" Bailey, Chair, GPAC

Chair, Graduate Council (if applicable)

Chair, Deans Council

MISSISSIPPI STATE UNIVERSITY

College of Veterinary Medicine

October 27, 2014

Kirk Swortzel, Ph.D.
Professor and Chair
University Committee on Courses and Curricula
Mail Stop 9638

Dear Dr. Swrotzel:

This letter is to inform you that the College of Veterinary Medicine (CVM) Graduate Programs Advisory Committee (GPAC) approved the application for the addition of CVM 8033Poultry Histopathology to the CVM graduate curricula. This course had been previously offered as a Special Topics course for students specializing in Avian Medicine within the MS and PhD programs in Veterinary Medical Sciences.

If you have any questions, please call me at 662-325-7726.

Sincerely,

R. Hartford Bailey, M.S., Ph.D., CFS
Professor and Chair, CVM GPAC

UCCC PROPOSAL TO ADD COURSE:

CVM 8033 POULTRY HISTOPATHOLOGY

1. CATALOG DESCRIPTION:

CVM 8033 Poultry Histopathology (3 hours) Microscopic anatomy and diagnosis of major poultry diseases. Tissues histologic reactions to injury from physical-mechanical, genetic-based, metabolic, viral, bacterial and protozoan insults. Writing histopathology reports.

2. DETAILED COURSE OUTLINE:

CVM 8033 POULTRY HISTOPATHOLOGY

COURSE OUTLINE

I. BASIC MICROSCOPIC REACTIONS OF AVIAN TISSUES TO INJURY (10 HRS)

A. INTRODCTION, TERMS AND DESCRIPTIVE HISTOPATHOLOGY (1 HR)

B. DISTURBANCES OF CIRCULATION (1 HR)

C. INFLAMMATION (1 HR)

D. INFLAMMATION AND DEGENERATION & NECROSIS (1 HR)

E. DISTURBANCES OF GROWTH (1HR)

F. FEATURES OR "THINGS" VIRAL, BACTERIAL AND MYCOTIC (1 HR)

G. PARASITES (1 HR)

H. MINERALS, URATES, PIGMENTS, DUST, PLANT MATERIAL, AMYLOID (1 HR)

I. Features-Normal, not associated with lesions (2 hr)

a. Assignment - Evaluate a slide with classic lesions of inflammation

b. Virtual Slide AH146

II. HISTOPATHOLOGY OF ORGAN SYSTEMS (33 hrs)

A. Integumentary System (3 hr)

1. Integumentary System, Normal Anatomy and Basic Responses

2. Integumentary System Viral Diseases

3. Integumentary System, Bacterial Diseases

4. Integumentary System, Mycotic Diseases

5. Integumentary System, Parasitic Diseases

6. Integumentary System, Neoplasia

7. Miscellaneous Skin Conditions

B. Lymphoid System (3 hr)

1. Lymphoid System - Basic Responses

2. Lymphoid System Viral Diseases

3. Lymphoid System, Bacterial Diseases

4. Lymphoid System, Parasitic Diseases

5. Lymphoid System, Neoplastic Diseases

6. Lymphoid Diseases, Miscellaneous Conditions

C. Respiratory System (3 hr)

1. Upper Respiratory System

2. Trachea

3. Lung

4. Air Sacs

D. Alimentary System (3 hr)

1. Alimentary System - Oral Cavity and Tongue

2. Alimentary System - Esophagus

3. Alimentary System - Crop and Proventriculus

4. Alimentary System - Gizzard

5. Alimentary System - Intestines - Viral and Bacterial Leisons

6. Alimentary System - Intestines - Parasites and Neoplasia

7. Alimentary System - Ceca and Cloaca

E. Hepatobiliary System (3 hr)

1. Hepatobiliary - Normal, Degeneration & Toxic Injury, Amyloid
2. Hepatobiliary - Viral Diseases
3. Hepatobiliary - Bacterial Diseases
4. Hepatobiliary - Parasitic and Mycotic Diseases
5. Hepatobiliary - Neoplasia

F. Urinary System (3 hr)

1. Urinary System - Normal
2. Urinary System - Degeneration and Necrosis
3. Urinary System - Viral Diseases
4. Urinary System - Bacterial, Parasitic, and Neoplastic Diseases

G. Cardiovascular System (3 hr)

1. Cardiovascular System - Normal and Toxic Injury
2. Cardiovascular System - Viral, Bacterial, and Mycotic
3. Cardiovascular System - Neoplasia and Blood Vessels

H. Musculoskeletal System (3 hr)

1. Musculoskeletal System - Muscle

2. Musculoskeletal System - Bone - Normal and Rickets

3. Musculoskeletal System - Bone - Dyschondroplasia, Osteochondrosis and Osteomyelitis

4. Musculoskeletal System - Neoplasia

5. Musculoskeletal System - Joints and Tendons

I. Nervous System, Eye, Ear, and Endocrine (2 hr)

1. Nervous System, Eye, Endocrine - Brain - Degenerative and Viral

2. Nervous System, Eye, and Endocrine - Brain - Bacterial, Mycotic, and Protozoa

3. Nervous System, Eye, and Endocrine - Eye

4. Nervous System, Eye, and Endocrine - Endocrine System

J. Reproductive System (2 hr)

1. Reproductive System - Male

2. Reproductive System - Female

K. Multisystem Diseases & conditions - Review (2 hr)

1. Selected viral diseases

a. highly pathogenic avian influenza

b. EXOTIC NEWCASTLE DISEASE

c. WEST NILE VIRUS

2. SELECTED BACTERIAL DISEASES AVIAN (2 HR)

a. MYCOBACTERIOSIS

b. CHLAMYDIOSIS

c. ORNITHOBACTEROSIS

d. EUBACTERIOSIS

3. EXUDATES ON ORGANS (1 HR)

VII. Midterm exam (1 HR)

VIII. Final exam (1 HR)

(i) Attendance: Attendance is expected at all lectures. When students enroll in a course, they assume the responsibility to attend class and complete assignments.

(ii) Electronic Devices (e.g., cell phones, PDAs): All portable electronic devices will be turned off and stowed during class. The only exception to this will be portable computers when used for note-taking. Any other exceptions must have prior approval by the instructor. No electronic device will be allowed during the taking of exams unless required for the actual taking of that test. Note: this does not apply to health-related devices.

3. METHOD OF EVALUATION

Method of Evaluation: Students will be evaluated on learning comprehension as follows:

1. Class participation: 10%
2. Midterm written exam: 45%
3. Final written exam: 45%

Total: 100%

Grading Scale: Grading Scale: A = 90-100%; B = 80-89%; C = 70-79%; D = 65-69%; F = 64% or below.

4. JUSTIFICATION AND LEARNING OUTCOMES

Histopathology is a major method aiding in the diagnosis of a number of bacterial, viral and other disease conditions of poultry. Many of these diseases are of major economic importance to the poultry industry including those of major epidemiological, zoonotic and food safety importance. Histopathology also aids in the diagnosis of avian influenza and Newcastle which are transboundary diseases that could devastate the poultry industry in the event of their introduction into the United States. Histopathology provides a major tool for the early detection of these and other diseases or can narrow the scope of disease outbreaks. Furthermore, poultry companies spend significant amounts of economic resources toward the diagnosis, prevention and control of various diseases. Therefore, poultry veterinarians properly trained in basic histopathology can provide important and unique input to the industry. Histopathology also provides a method for basic research on poultry diseases. This course is designed to provide poultry veterinarians or professionals with fundamental skills for the histologic diagnosis of common and important poultry diseases with an emphasis on diseases of commercial chickens.

Upon completion of this course, the students will:

a) Will have an understanding normal microscopic anatomy or histology of avian tissues and organ systems.

b) Recognize basic histopathological responses to tissue injury resulting from genetic-based, physical-mechanical, metabolic, viral, bacterial or parasitic agents.

c) Recognize unique histopathological patterns characteristic of major diseases involving organ systems of major importance in poultry medicine.

d) Be able to write descriptive histopathology reports that include description of microscopic lesions, histopathology diagnosis and discussion of findings.

Justification for location of course:

This course is part of the curriculum for graduate students registered in the Master of Veterinary Sciences on Avian Medicine. The course requires at least a basic understanding of normal microanatomy. This course will be taught at the Poultry Research & Diagnostic

Laboratory in Pearl, MS as a special topics course. The classes and activities within this course will be scheduled to fit the weekly activities of the students registered in this program on Avian Medicine. Students from other programs may be accepted into the course but they would have to commute to the PRDL once a week to participate in this course. There are options for the lecture section of this course to be taught via video conferencing, if necessary. The use of video conferencing lectures has been successfully completed in the past from this facility. Since the majority of the poultry residents and post DVM students will be doing the majority of their work housed out of PRDL and with the poultry faculty based at the PRDL, it is logical that the graduate courses specific for poultry be taught from this facility.

5. INSTRUCTORS OF RECORD

Instructors: Floyd D. Wilson, DVM, Clinical Professor

Brittany Baughman, DVM, MS, Dipl. ACVP, Assistant Professor

6. PLANNED FREQUENCY

Fall and Spring as needed.

7. METHOD OF INSTRUCTION CODE

Method of Instruction Code:C (Lecture)

8. METHOD OF DELIVERY

*Method of Delivery Code:*F (Face to face)

9. PROPOSED C.I.P. NUMBER

C.I.P. Code: 51.2505

10. PROPOSED 24-CHARACTER ABBREVIATION

Poultry Histopathology

11. *PROPOSED SEMESTER EFFECTIVE*

Spring 2015

12. SUPPLEMENTAL BIBLIOGRAPHY

1. Avian Histopathology, 3rd Edition, 2008. Oscar J. Fletcher and Tahseen Abdul-Aziz, Editors, Published by The American Association of Avian Pathologists.

2. Diseases of Poultry, 12th Edition, 2008. Y. M. Saif, Editor-in-Chief, Blackwell Publishing, Ames Iowa.

13. PROPOSAL CONTACT PERSON

Instructors: Dr. Floyd Wilson, phone: 601-420-4746 or email: fwilson@mvrdl.msstate.edu and Dr. Brittany Baughman, phone 601-420-4788 or email bbaughman@mvrdl.msstate.edu

CVM Office of Research and Graduate Studies: Barbara E. Perrigin, phone: 662-325-1417 or email: bep2@msstate.edu.

CVM 8033 Poultry Histopatholgy

Syllabus

Class Time: TBA

Location: Poultry Research & Diagnostic Laboratory

Instructor: Floyd Wilson, DVM and Brittany Baughman, DVM, MS, Dipl. ACVP
3137 Hwy 468 West
Pearl, MS 39208
Phone: 601-420-4746 (Wilson) 601-420-4788 (Baughman)
E-mail: fwilson@mvrdl.msstate.edu bbaughman@mvrdl.msstate.edu

Learning objectives:
Microscopic anatomy and diagnosis of major poultry diseases. Tissues histologic reactions to injury from physical-mechanical, genetic-based, metabolic, viral, bacterial and protozoan insults. Writing histopathology reports.

Learning outcomes:
Learning outcomes for this course will be as follows: 1) have a detailed understanding of poultry anatomy and histopathology 2) develop a general understanding of the writing descriptive histopathology reports including microscopic lesions, diagnosis and discussion of findings.

Learning assessments:
There will be two exams, a midterm (45%) and a final (45%). Students will also be assessed based on class participation (10%).

Grading Scale: A = 90-100%; B = 80-89%; C = 70-79%; D = 65-69%; F = 64% or below.

Attendance:
Students are expected to attend all class meetings. Attendance is mandatory for exams. **The professor must be notified at least 24 hours prior to the exam with an excused absence**. If you miss an exam and do not provide the professor with written approved documentation of the absence, you will receive a zero for the exam.

Honor Code:
Students are expected to abide by the Mississippi State University honor code: "As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Cell Phone and Electronic Policy:
Electronic Devices (e.g., cell phones, PDAs): All portable electronic devices will be turned off and stowed during class. The only exception to this will be portable computers when used for note-taking. Any other exceptions must have prior approval by the instructor. No electronic device will

be allowed during the taking of exams unless required for the actual taking of that test. Note: this does not apply to health-related devices. If you have any questions, you may refer to AOP 10.08 at http://www.msstate.edu/dept/audit/1008.html.

The professor reserves the right to make adjustments or changes throughout the semester. It is the student's responsibility to learn about these changes if they miss any class time.

Supplemental Bibliography:

1. Avian Histopathology, 3rd Edition, 2008. Oscar J. Fletcher and Tahseen Abdul-Aziz, Editors, Published by The American Association of Avian Pathologists.
2. Diseases of Poultry, 12th Edition, 2008. Y. M. Saif, Editor-in-Chief, Blackwell Publishing, Ames Iowa.

Course Lectures and Hours:

I. BASIC MICROSCOPIC REACTIONS OF AVIAN TISSUES TO INJURY (10 HRS)

A. INTRODCTION, TERMS AND DESCRIPTIVE HISTOPATHOLOGY (1 HR)

B. DISTURBANCES OF CIRCULATION (1 HR)

C. INFLAMMATION (1 HR)

D. INFLAMMATION AND DEGENERATION & NECROSIS (1 HR)

E. DISTURBANCES OF GROWTH (1 HR)

F. FEATURES OR "THINGS" VIRAL, BACTERIAL AND MYCOTIC (1 HR)

G. PARASITES (1 HR)

H. MINERALS, URATES, PIGMENTS, DUST, PLANT MATERIAL, AMYLOID (1 HR)

I. FEATURES-NORMAL, NOT ASSOCIATED WITH LESIONS (2 HR)

A. Assignment - Evaluate a slide with classic lesions of inflammation

B. Virtual Slide AH146

II. HISTOPATHOLOGY OF ORGAN SYSTEMS (33 hrs)

A. Integumentary System

1. Integumentary System, Normal Anatomy and Basic Responses
2. Integumentary System Viral Diseases
3. Integumentary System, Bacterial Diseases
4. Integumentary System, Mycotic Diseases
5. Integumentary System, Parasitic Diseases
6. Integumentary System, Neoplasia
7. Miscellaneous Skin Conditions

B. Lymphoid System (3 hr)

1. Lymphoid System - Basic Responses
2. Lymphoid System Viral Diseases
3. Lymphoid System, Bacterial Diseases
4. Lymphoid System, Parasitic Diseases

5. Lymphoid System, Neoplastic Diseases

6. Lymphoid Diseases, Miscellaneous Conditions

C. Respiratory System (3 hr)

1. Upper Respiratory System

2. Trachea

3. Lung

4. Air Sacs

D. Alimentary System (3 hr)

1. Alimentary System - Oral Cavity and Tongue

2. Alimentary System - Esophagus

3. Alimentary System - Crop and Proventriculus

4. Alimentary System - Gizzard

5. Alimentary System - Intestines - Viral and Bacterial Leisons

6. Alimentary System - Intestines - Parasites and Neoplasia

7. Alimentary System - Ceca and Cloaca

E. Hepatobiliary System (3 hr)

1. Hepatobiliary - Normal, Degeneration & Toxic Injury, Amyloid

2. Hepatobiliary - Viral Diseases

3. Hepatobiliary - Bacterial Diseases

4. Hepatobiliary - Parasitic and Mycotic Diseases

5. Hepatobiliary - Neoplasia

F. Urinary System (3 hr)

1. Urinary System - Normal

2. Urinary System - Degeneration and Necrosis

3. Urinary System - Viral Diseases

4. Urinary System - Bacterial, Parasitic, and Neoplastic Diseases

G. Cardiovascular System (3 hr)

1. Cardiovascular System - Normal and Toxic Injury

2. Cardiovascular System - Viral, Bacterial, and Mycotic

3. Cardiovascular System - Neoplasia and Blood Vessels

H. Musculoskeletal System (3 hr)

1. Musculoskeletal System - Muscle

2. Musculoskeletal System - Bone - Normal and Rickets

3. Musculoskeletal System - Bone - Dyschondroplasia, Osteochondrosis and Osteomyelitis

4. Musculoskeletal System - Neoplasia

5. Musculoskeletal System - Joints and Tendons

I. Nervous System, Eye, Ear, and Endocrine (3 hr)

1. Nervous System, Eye, Endocrine - Brain - Degenerative and Viral

2. Nervous System, Eye, and Endocrine - Brain - Bacterial, Mycotic, and Protozoa

3. Nervous System, Eye, and Endocrine - Eye

4. Nervous System, Eye, and Endocrine - Endocrine System

J. Reproductive System (2 hr)

1. Reproductive System - Male

2. Reproductive System - Female

K. Multisystem Diseases & conditions - Review (2 hr)

1. Selected viral diseases

A. highly pathogenic avian influenza

B. EXOTIC NEWCASTLE DISEASE

C. WEST NILE VIRUS

2. SELECTED BACTERIAL DISEASES AVIAN (2 HR)

A. MYCOBACTERIOSIS

B. CHLAMYDIOSIS

C. ORNITHOBACTEROSIS

D. EUBACTERIOSIS

3. EXUDATES ON ORGANS (1 HR)

VI. Midterm exam (1 hr)

VII. Final exam (1 hr)

Classes will be taught at the Poultry Research & Diagnostic Laboratory in Pearl, MS. If prior arrangements are made, the option of video conferencing some lectures may be available. Speak to your professor for more information.

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Freeman Hall-Room 102, Mail Stop 9638 (325-1922).

College or School: College of Veterinary Medicine **Department:** Clinical Sciences

Contact Person: Barbara Perrigin (Ryan Butler) **Mail Stop:** 9825 **E-mail:** bep2@msstate.edu

Nature of Change: Add **Date Initiated:** 2/27/14 **Effective Date:** Spring 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
CVM	**8822**	**Advanced Surgical Techniques**	**(2)**

New or Modified Catalog Description:

Prerequisite (consent of instructor). This is a 4 hour laboratory course (2 credit hours) covering the application of advanced surgical skills. The laboratories will provide students the opportunity to learn advanced principles and surgical skills and utilize that knowledge in the management of clinical patients.

Approved: *Date:*

R. Hartford Bailey, Chair, CVM Graduate Program Advisory Committee

Mark L. Lawrence, Professor and Associate Dean College of Veterinary Medicine

Chair, University Committee on Courses and Curricula

Chair, Graduate Council (if applicable)

Chair, Deans Council

APPROVAL FORM FOR

COURSES

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the course change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Freeman Hall-Room 102, Mail Stop 9638 (325-1922).

College or School: College of Veterinary Medicine Department: Clinical Sciences

Contact Person: Barbara Perrigin (Ryan Butler) Mail Stop: 9825 E-mail: bep2@msstate.edu

Nature of Change: Add Date Initiated: 2/27/14 Effective Date: Spring 2015

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours

Current Catalog Description:

New or Modified Listing for Catalog:

Symbol	Number	Title	Credit Hours
CVM	**8812**	**Advanced Surgical Techniques**	**(2)**

New or Modified Catalog Description:

Prerequisite (consent of instructor). Repeatable 2 hour lab course. Application of advanced surgical skills and advanced principles, Review pertinent anatomy relating to treating clinical patients.

Approved:	***Date:***
Andrew Mackin, Interim Head, CVM Department of Clinical Sciences	08/22/14
R. Hartford Bailey, Chair, CVM Graduate Program Advisory Committee	8/25/14
Mark L. Lawrence, Professor and Associate Dean College of Veterinary Medicine	8/26/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

Advanced Surgical Techniques

CVM 8822

Spring Semester, 2015

Faculty:
Dr. Ryan Butler (Instructor of Record)
Dr. Cory Fisher
Dr. Jason Syrcle
Dr. Elizabeth Swanson
Dr. Ronald McLaughlin

Course Description: This is a 4 hour laboratory course (2 credit hours) covering the application of advanced surgical skills. The laboratories will provide students the opportunity to learn advanced principles and surgical skills and utilize that knowledge in the management of clinical patients.

Method of Evaluations: Students will be evaluated will be based on performance in clinical and laboratory sessions. Grade will be based off attendance (5%), participation (5%), communication skills (20%), laboratory skills (30%), and practical application of knowledge gained during the course to clinical service and teaching (40%). A written evaluation in each of these areas will be provided to the student at the conclusion of the course.

Communication Skills: The ability of the student to effectively communicate with other students, referring veterinarians, CVM faculty/staff, and professional students will be subjectively evaluated by the instructors. This subjective evaluation will include observation of both interpersonal interactions and written communication (discharge notes, phone logs, etc…).

Laboratory Skills: Graduate students will be subjectively evaluated by attending faculty members with regard to their ability to perform the designated surgical skills and their improvement in those skills throughout the course. Feedback from the instructors will be provided to ensure the students make satisfactory improvement in skills throughout the course.

Practical application of knowledge to clinics and teaching: Graduate students will be subjectively evaluated by the supervising faculty on their knowledge of the covered topics in the clinical setting and teaching endeavors. The students will be required to apply their expanded knowledge as gained through clinical and laboratory sessions to better understand the diseases and treatment modalities of clinical patients, and improve instruction of students within the veterinary curriculum. Their ability to apply this knowledge in the clinical setting will be evaluated by the supervising faculty members of the service with feedback used to support their final grade in the course. On the clinical floor, students should be able to adequately demonstrate their ability to apply the most current and scientifically sound diagnostic and treatment modalities as supported by the literature and in such a way as deemed appropriate for each individual patient. Supervising faculty on the clinic floor are directly responsible for the medical and surgical management of all patients, and they will have direct contact with the students and be able to evaluate their ability to apply gained knowledge to the care and treatment of clinical patients.

Course Outline: The course content consists of one-on-one clinical and laboratory instruction (the schedule may be modified as deemed necessary by the faculty leading the course). This is a 4 hour per semester laboratory course (2 credit hours), which will meet daily for the duration of the course. The exact scheduling for individual graduate students will vary throughout the course depending on clinical assignments. A *minimum*

60 hours direct contact time with faculty in laboratory and clinical sessions are required to complete the course.

Topics covered in the course will include, but may not be limited to (depending on clinical case load), the following:

I: Anesthesiology (4 Contact Hours)
- A: Analgesia
- B: Regional Anesthesia
- C: Pharmacology

II: Neurology (4 Contact Hours)
- A: Neurologic Exam
- B: Neurologic Imaging
- C: Neurosurgery

III: Soft Tissue Surgery (20 Contact Hours)
- A: Surgery of the Endocrine System
- B: Gastrointestinal Surgery
- C: Urologic Surgery
- D: Oncology Surgery
- E: Wound Healing / Management of Wounds
- F: Laparoscopy
- G: Thoracoscopy

IV: Orthopedic Surgery (24 Contact Hours)
- A: Fracture Biology
- B: Fracture Fixation
- C: Arthroscopy
- D: Arthrology
- E: Osteotomy Procedures

V: Small Animal Surgical Emergencies (4 Contact Hours)
- A: Patient Triage
- B: Patient Resuscitation
- C: Management of Surgical Emergencies

VI: Radiological Techniques and Imaging (4 Contact Hours)
- A: Conventional Radiographs
- B: CT
- C: MRI

METHOD OF EVALUATION

Attendance	**5%**	**(5 points)**
Participation	**5%**	**(5 points)**
Communication	**20%**	**(20 points)**
Laboratory Skills	**30%**	**(30 points)**
Practical Application of Knowledge	**40%**	**(40 points)**
Total	**100%**	**(100 points)**

A through F

100 point scale

A	**90 – 100**
B	**80 – 89**
C	**70 –79**
D	**60—69**
F	**below 60**

JUSTIFICATION AND LEARNING OUTCOME

The objectives of this course are to provide a means for graduate students, particularly those within the department of clinical sciences with an interest in surgery, a means to learn and practice advanced surgical and patient management skills. The skills learned during this course will expand their knowledge and improve their clinical effectiveness.

SUPPORT

Faculty members from the Clinical Sciences Department will be available to teach the various sections of this course.

INSTRUCTOR OF RECORD

The instructor of record will be Dr. Ryan Butler. Other surgical faculty (Drs. Cory Fisher, Jason Syrcle, Elizabeth Swanson, and Ron McLaughlin) will also participate in the instruction and evaluation of the students.

GRADUATE STUDENT REQUIREMENTS

Enrollment in the M.S. or Ph.D. program in Veterinary Medical Sciences and consent of the course instructor. Also, the student must have an approved veterinary medical degree and a valid license to practice veterinary medicine in the state of Mississippi.

PLANNED FREQUENCY

This course will be offered each semester as indicated based on the interest and need of the graduate students. This is a 4 hour laboratory course (2 credit hours), which will meet daily as the students are assigned to clinical service. Direct, one-on-one interaction with faculty members on the clinic floor and in laboratory sessions will be required and a minimum of 60 hours direct contact time is required to successfully complete the course. This is a repeatable course offering, and students are able to repeat the course a total of 3 times.

ACADEMIC HONESTY

All students will be expected to follow the MSU honor code, **"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."** The full MSU honor code can be found at: www.honorcode.msstate.edu/pdf/honor-code.pdf

ACCOMMODATIONS

Students needing special accommodations should see the instructor. This course will follow MSU's Academic Operation Procedures for accommodations.

EXPLANATION OF ANY DUPLICATION

N/A

METHOD OF INSTRUCTION CODE/METHOD OF DELIVERY

Method of instruction code: L
Method of delivery code: F

PROPOSED C.I.P. NUMBER: 51.25

PROPOSED 24-CHARACTER ABBREVIATION:

ADV SURGICAL TECHNIQUES

PROPOSED SEMESTER EFFECTIVE:

Spring 2015

OTHER APPROPRIATE INFORMATION

N/A

PROPOSAL CONTACT PERSON

Barbara E. Perrigin, Coordinator, Graduate Studies, CVM Office of Research and Graduate Studies, 662-325-1417.

CVM 8822: Advanced Surgical Techniques

Credit hours: 2

Course meeting time: Once per week for 2 hours

Course location: TBD

Primary Instructor: Dr. Ryan Butler, Assistant Professor, CVM Dept. of Clinical Sciences
Office phone: 662-325-1438; Email: rbutler@cvm.msstate.edu

Co-instructors: Dr. Cory Fisher, Assistant Clinical Professor, CVM Dept. of Clinical Sciences, Office phone: 662-325-1396; Email: fisher@cvm.msstate.edu

Dr. Jason Syrcle, Assistant Clinical Professor, CVM Dept. of Clinical Sciences, Office phone: 662-325-1313, Email: syrcle@cvm.msstate.edu

Dr. Elizabeth Swanson, Assistant Professor, Assistant Professor, CVM Dept. of Clinical Sciences, Office phone: 662-325-1266, Email: eswanson@cvm.msstate.edu

Dr. Ron McLaughlin, Interim Associate Dean/Professor, CVM Dept. of Clinical Sciences, Office phone: 662-325-1131; Email: mclaughlin@cvm.msstate.edu

Course prerequisites: Consent of instructor.

Course description: This is a 4 hour laboratory course (2 credit hours) covering the application of advanced surgical skills. The laboratories will provide students the opportunity to learn advanced principles and surgical skills and utilize that knowledge in the management of clinical patients.

Course rationale: The objectives of this course are to provide a means for graduate students, particularly those within the department of clinical sciences with an interest in surgery, a means to learn and practice advanced surgical and patient management skills. The skills learned during this course will expand their knowledge and improve their clinical effectiveness.

Learning objectives: The course is designed to familiarize the student with advanced surgical procedures such as canine arthroscopy, canine laparoscopy, canine thoracoscopy, fracture repair, osteotomy procedures, and soft tissue surgery.

Methods of instruction: The course will consist of 4 hours of laboratory per week. Graduate students will be assigned to the surgical service and will participate in the clinical management of cases. The student will be instructed on a face-to-face basis with the attending clinician assigned to the student's clinical service. Additionally, laboratory sessions will be scheduled throughout the duration of the class in order to better illustrate certain techniques. The exact schedule for each student and each laboratory session will vary and will be determined at the start of the class.

Required texts: No text required.

Attendance: Because of the nature of the class, attendance at all sessions is mandatory. If the student must be absent for official school business or other circumstances beyond the student's control (e.g. illness, death in family, etc.), the absence must be approved by the attending clinician responsible for supervising the student and those sessions must be completed at a future date in order to successfully complete the class.

Academic honesty: All students will be expected to follow the MSU honor code, **"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."** The full MSU honor code can be found at: www.honorcode.msstate.edu/pdf/honor-code.pdf

Class etiquette: Arriving late, texting, receiving cell phone calls, playing on your computer/iPad/tablet, or being otherwise being generally disruptive is distracting to everyone in the class and will not be tolerated. After the first warning by the instructor, the student will be subject to dismissal from the course for repeated violation.

Accommodations: Students needing special accommodations should see the instructor. This course will follow MSU's Academic Operation Procedures for accommodations.

Grading policies: Each student's grade will be subjectively determined by participating instructors based on performance during the class. The grade will be based of attendance (5%), participation (5%), communication skills (20%), laboratory skills (30%), and practical application of knowledge gained during the course to service and teaching (40%). A written evaluation will be provided for each student at the conclusion of the course.

- *Communication Skills:* The ability of the student to effectively communicate with other students, referring veterinarians, CVM faculty/staff, and professional students will be subjectively evaluated by the instructors. This subjective evaluation will include observation of both interpersonal interactions and written communication (discharge notes, phone logs, etc...).

- *Laboratory Skills:* Graduate students will be subjectively evaluated by attending faculty members with regard to their ability to perform the designated surgical skills and their improvement in those skills throughout the course.

- *Practical application of knowledge to clinics and teaching:* Graduate students will be subjectively evaluated by the supervising faculty on their knowledge of the covered topics in the clinical setting and teaching endeavors. The students will be required to apply their expanded knowledge as gained through clinical and laboratory sessions to better understand the diseases and treatment modalities of clinical patients, and improve instruction of students within the veterinary curriculum.

Grading scale: Total earned points will be divided by total possible points to determine the percentage of points earned. The grading scale is a ten percentage point scale.
A = 90 - 100%

B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F = <60%

CVM 8822
Course Outline
Dr. Ryan Butler
(Primary Instructor)

The course content consists of one-on-one clinical and laboratory instruction (the schedule may be modified as deemed necessary by the faculty leading the course). This is a 4 hour per semester laboratory course (2 credit hours), which will meet daily for the duration of the course. The exact scheduling for individual graduate students will vary throughout the course depending on clinical assignments. A *minimum* 60 hours direct contact time with faculty in laboratory and clinical sessions are required to complete the course.

Topics covered in the course will include, but may not be limited to (depending on clinical case load), the following:

I: Anesthesiology (4 Contact Hours)
- A: Analgesia
- B: Regional Anesthesia
- C: Pharmacology

II: Neurology (4 Contact Hours)
- A: Neurologic Exam
- B: Neurologic Imaging
- C: Neurosurgery

III: Soft Tissue Surgery (20 Contact Hours)
- A: Surgery of the Endocrine System
- B: Gastrointestinal Surgery
- C: Urologic Surgery
- D: Oncology Surgery
- E: Wound Healing / Management of Wounds
- F: Laparoscopy
- G: Thoracoscopy

IV: Orthopedic Surgery (24 Contact Hours)
- A: Fracture Biology
- B: Fracture Fixation
- C: Arthroscopy
- D: Arthrology
- E: Osteotomy Procedures

V: Small Animal Surgical Emergencies (4 Contact Hours)
- A: Patient Triage

B: Patient Resuscitation
C: Management of Surgical Emergencies

VI: Radiological Techniques and Imaging (4 Contact Hours)
A: Conventional Radiographs
B: CT
C: MRI

MISSISSIPPI STATE
UNIVERSITY

Department of Plant and Soil Sciences

September 16, 2014

Dr. Kirk Swortzel
Chair, University Committee on Courses and Curricula
Mailstop 9745
Lloyd-Ricks Watson, Room 215
Mississippi State, MS 39762

Dear Dr. Swortzel:

As a department, we feel separate graduate degree programs under Plant and Soil Sciences are warranted and appropriate. Mississippi State University currently confers the M.S. degree in Agriculture and the Ph.D. in Agricultural Sciences which includes students in the Department of Plant and Soil Sciences. We are proposing two new graduate degrees: Plant and Soil Sciences M.S. and Plant and Soil Sciences Ph.D. These degree programs will be in the Department of Plant and Soil Sciences under CIP Code 01.1101.

The primary factor in requesting this change comes from our stakeholders. They are very supportive of the change for several reasons. First, the current degree programs (Master of Science, Agriculture; Doctor of Philosophy, Agricultural Science) are very broad subject areas. Their feeling is that, for the sake of program identity, our degree programs should be more specifically defined with concentrations. The proposed degrees accurately define the degree programs as well as having specific PSS concentrations. The requested change also comes from prospective students. They are looking for programs with specific identity. Presently, we are losing out to programs who have degree programs in specific disciplines. Lastly, a specific PSS graduate degree program will greatly enhance opportunities for international students receiving the Doctor of Philosophy. After receiving the Doctor of Philosophy in Plant and Soil Sciences, they will have the opportunity to extend their postdoctoral training in the United States beyond six months.

In closing, many of our peer and peer plus institutions with programs in agriculture have degree programs very similar to our proposed programs. In order for us to remain competitive, to provide our graduates greater post graduate opportunities, and to enhance our program identity, we need to implement these programs. I am very hopeful these proposed degrees are supported. Please feel free to contact me if additional information is needed.

Respectfully submitted,

J. Mike Philips
Professor and Head

Appendix 7: Authorization to Plan a New Degree Program

Institution: Mississippi State University

Date of Implementation:	Six Year Cost of Implementation:	Per Student Cost of Implementation:
Spring 2016	Minimal	Minimal

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	Six Digit CIP Code:
Plants and Soil Sciences Master of Science	01.1101

Degree(s) to be Awarded:	Credit Hour Requirements:
Master of Science	30

List any institutions within the state offering similar programs:

None

Responsible Academic Unit(s):	Institutional Contact:
Department of Plant and Soil Science	Dr. J. Michael Phillips

Number of Students Expected to Enroll in First Six Years:		Number of Graduates Expected in First Six Years:	
Year One	29	Year One	7
Year Two	32	Year Two	11
Year Three	28	Year Three	6
Year Four	31	Year Four	6
Year Five	40	Year Five	7
Year Six	41	Year Six	8
Total	201	Total	45

Program Summary:

Graduate study is offered leading to the Plant and Soil Sciences Master of Science degree with concentrations in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of problems for thesis research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers graduate programs in Plant Breeding and Genetics, Molecular Biology, Crop Modeling, Agronomy, Soil Science, Crop Physiology, Weed Science, Turfgrass Science, and Horticulture. Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. This program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses.

Institutional Executive Officer Signature **Date**

Institution: Mississippi State University

1. Describe the proposed program and explain how it fits within the mission of the institution.

   The proposed program fulfills the land-grant missions of the institution in the research and teaching of plant and soil sciences. The program itself already exists at the university under the umbrella Master's of Science in Agriculture Degree Program. We are only asking to move this program to a more defined C.I.P. code

2. Provide the information used to determine Mississippi's need for this program. Be specific and provide supporting data (*supporting data must include employment statistics*).

   This program has maintained a steady number of degree graduates over the past six years. Institutional Effectiveness reports collected over the past 2 years indicate that 75% or greater of M.Sc. graduates are employed or continuing their education indicating that this program is meeting Mississippi's need for people trained in this area of science.

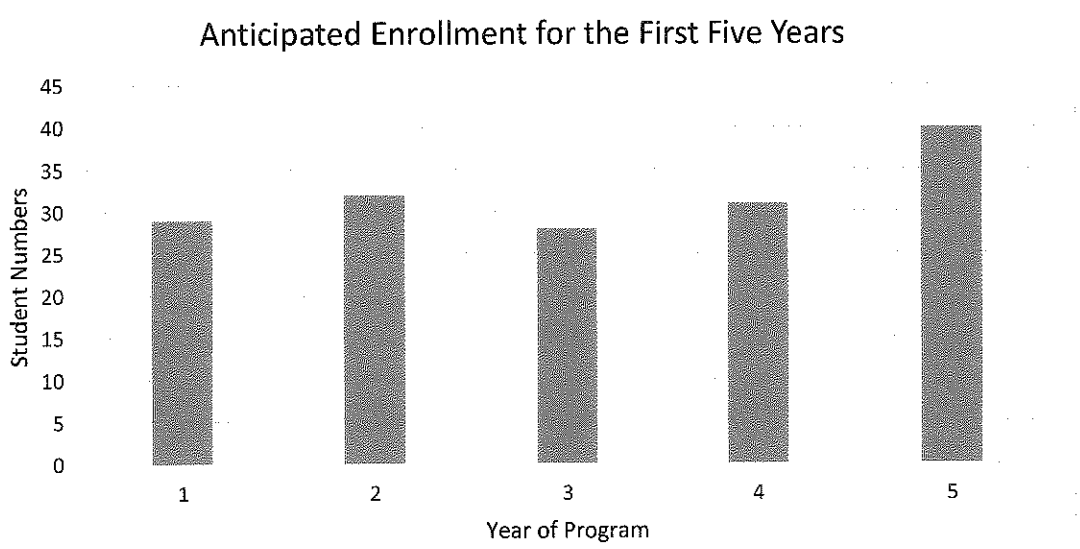
3. Describe the anticipated institutional impact including any research efforts associated with this program.

   As this program already exists under an umbrella M.Sc. program and we are only requesting a change in the C.I.P code, there should be no impact to the institution.

4. Provide the total anticipated budget for the program. Indicate from where the funds will come.

   There should be no need for any additional funds for this program.

5. Use a chart to show anticipated enrollment for the first five years of the program.



6. Indicate where the proposed program is offered within the state
   a. Chart similarities and differences in the proposed program and those offered in other institutions
   b. Explain anticipated consequences on enrollment in other institutions offering the program, including any ramifications on the Ayers settlement

This program is not offered anywhere else in the state.

7. What is the specific basis for formulating the number of graduates expected in the first six years?

   As this program is currently offered under an umbrella degree, we used our historical enrollment data from the past six years.

Appendix 8: New Degree Program Proposal

Institution:		
Date of Implementation:	**Six Year Cost of Implementation:**	**Per Student Cost of Implementation:**
Spring 2016	Minimal	Minimal

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Plant and Soil Sciences Master of Science	01.1101

Degree(s) to be Awarded:	**Credit Hour Requirements:**
Master of Science	30

List any institutions within the state offering similar programs:

None

Responsible Academic Unit(s):	**Institutional Contact:**
Department of Plant and Soil Science	Dr. J. Michael Phillips

Check one of the boxes below related to SACS COC Substantive Changes.

[x] **Proposed Program is Not a Substantive Change**	[ ] **Proposed Program is a Substantive Change**

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	29	**Year One**	7
Year Two	32	**Year Two**	11
Year Three	28	**Year Three**	6
Year Four	31	**Year Four**	6
Year Five	40	**Year Five**	7
Year Six	41	**Year Six**	8
Total	201	**Total**	45

Program Summary:

Graduate study is offered leading to the Plant and Soil Sciences Master of Science degree with concentrations in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of problems for thesis research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers graduate programs in Plant Breeding and Genetics, Molecular Biology, Crop Modeling, Agronomy, Soil Science, Crop Physiology, Weed Science, Turfgrass Science, and Horticulture. Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. This program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses.

Institutional Executive Officer Signature **Date**

Institution:

1. Describe how the degree program will be administered including the name and title of person(s) who will be responsible for curriculum development and ongoing program review.

   The degree will be administered by a committee composed of faculty and the graduate coordinator within the Department of Plant and Soil Sciences. Dr. J. Michael Phillips (Department Head) will be responsible for curriculum development and program review.

2. Describe the educational objectives of the degree program including the specific objectives of any concentrations, emphases, options, specializations, tracks, etc.

   1. Students will be able to demonstrate a broad based knowledge in their respective discipline.
   2. Students will demonstrate a broad based knowledge related to identification and management of issues in Mississippi within their respective discipline.
   3. Students will know and understand current trends and important issues within their respective discipline.
   4. Students will have a working knowledge of data management and interpretation.
   5. Students will be able to communicate effectively with clientele.

3. Describe any special admission requirements for the degree program including any articulation agreements that have been negotiated or planned.

   None

4. Describe the professional accreditation that will be sought for this degree program. If a SACS visit for substantive change will be necessary, please note.

   None

5. Describe the curriculum for this degree program including the recommended course of study (appending course descriptions for all courses) and any special requirements such as clinical, field experience, community service, internships, practicum, a thesis, etc.

   Attached as Appendix A.

6. Describe the faculty who will deliver this degree program including the members' names, ranks, disciplines, current workloads, and specific courses they will teach within the program. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added.

   Attached as Appendix B.

7. Describe the library holdings relevant to the proposed program, noting strengths and weaknesses. If there are guidelines for the discipline, do current holdings meet or exceed standards?

   The library holdings are adequate for the proposed degree. The degree does not propose to add new courses in addition to those already offered on campus, thus library holdings should already be in place.

8. Describe the procedures for evaluation of the program and its effectiveness in the first six years of the program, including admission and retention rates, program outcome assessments, placement of graduates, changes in job market need/demand, ex-student/graduate surveys, or other procedures.

   Several criteria will be used to evaluate the success of this degree program in the first six years.

   1. Students will be advised by members of the graduate faculty in the Department of Plant and Soil Sciences. During the advisory sessions informal interviews will take place with the individual students concerning their progress in the

program.

2. The departmental academic records assistant monitors graduation and retention rates and maintains a record of employment statistics after graduation. These records will be periodically reviewed and adjustments to the degree program will be made as needed.

3. The Dean of the College of Agriculture and Life Sciences maintains an advisory council for advice on teaching, research and service/extension activities within the College. This counsel is made up of alumni, employers, agency and organization representatives and other CALS constituents. This counsel will be consulted regularly for advice on changing job markets and desired educational requirements of graduates from this degree. In addition, the department will seek input on the perceived strengths and weaknesses of the proposed degree and changes in the degree will be made as needed.

4. Graduates are required to complete a thesis and an oral thesis defense or an oral comprehensive exam. The graduate committee must approve the thesis topic, research proposal, program of study and final thesis. This exam will serve as an occasion for the student to discuss their thoughts and opinions on their graduate experience.

5. In accordance with MSU policy on SACS Institutional Effectiveness requirements, an annual IE self-evaluation and report on the degree will be completed for the Plant and Soil Sciences Master of Science degree as is currently done for the Master of Science in Agriculture with concentrations in Agronomy, Horticulture and Weed Science currently offered by the department.

9. What is the specific basis for formulating the number of graduates expected in the first six years?

As this program is currently offered under an umbrella degree, we used our historical enrollment data from the past six years.

Appendix A
Course Descriptions

BCH 6013 Principles of Biochemistry: 3 hours (Prerequisite: CH 2503, BIO 1134 or equivalent.) Three hours lecture. A survey of biochemistry designed to provide the non-major with a comprehensive background in the field. (Credit will not be given to students matriculating in the Biochemistry or Molecular Biology degree programs.)

PSS 6013 Principles of Floral Design: 3 hours. Online course. 2hours lectures, 2 hours lab. Focus on design principles, value-added products and longevity

PSS 6023 Floral Management: 3 hours. Three hours lecture. Online course. To identify and understand the basic principles necessary to operate wholesale and retail floral businesses

PSS 6033 Case Studies in Floral Management: 3 hours. Three hours lecture. Online course. (Prerequisites: PSS 2343 or PSS 6013 and graduate standing). Identification of current problems in floral management and the development of strategies for their resolution

PSS 6043 International Horticulture: 3 hours. (Prerequisite: PSS 1313). Three hours lecture. Online course. Worldwide overview of horticultural export, marketing, and international trade issues and individual country analyses of specific fruit, vegetable and ornamental crops

PSS 6073 Sympathy Floral Design: 3 hours. (Prerequisite PSS 2343). Two hours lecture. Two hours laboratory. Application of design theory and principles used in sympathy work

PSS 6083 Floral Design for Special Events: 3 hours. (Prerequisite: PSS 2343). Two hours lecture. Two hours laboratory. Planning and preparing of floral design compositions for use in special events

PSS 6093 Post-harvest Care of Cut Floral Crops: 3 hours. Two hours lecture. Two hours laboratory. Identification, postharvest care and handling, sourcing and distribution of cut floriculture plant materials

PSS 6103 Forage and Pasture Crops: 3 hours. Two hours lecture. Two hours laboratory. Origin, uses, and ecology of forage plants, establishment, nutritive value, use, yield and maintenance of forage plants as related to morphology, physiology and pasture management

PSS 6113 Agricultural Crop Physiology: 3 hours. Three hours lecture. Online course. Physiology of agricultural plants, including water relations, respiration, photosynthesis and growth and development

PSS 6123 Grain Crops: 3 hours. (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Corn, small grain, practice in commercial grading given in laboratory

PSS 6133 Fiber and Oilseed Crops: 3 hours. (Prerequisite: Junior standing). Three hours lecture. Production and utilization of fiber and oilseed crops. Emphasis on cotton and soybean production in Mississippi

PSS 6143 Advanced Fruit Science: 3 hours. (Prerequisite: PSS 3043 or equivalent). Three hours lecture. Three hours laboratory. A study of the latest advances in pomology and interpretation of current research findings and their application to modern fruit growing

PSS 6223 Seed Production: 3 hours. (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Principles and practices, special emphasis on production of varietally pure seeds; agronomic factors in harvesting, drying, storage, treating and marketing seed

PSS 6313 Soil Fertility and Fertilizers: 3 hours. (Prerequisites: PSS 3303 and Junior standing). Three hours lecture. Fundamentals and concepts of soil fertility; sources and responses of crops to plant nutrients; soil fertility evaluation and maintenance through fertilization

PSS 6314 Microbiology and Ecology of Soil: 4 hours. (Prerequisite: PSS 3303). The study of diverse soil microbial communities and how they influence the structure and function of ecosystems (natural and managed) and the global biosphere (same as BIO 4324/6324)

PSS 6323 Soil Classification: 3 hours. (Prerequisite: PSS 3303). Three hours lecture. Origin, development, and classification of soils including identification and field mapping

PSS 6333 Soil Conservation and Land Use: 3 hours. (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Soil identification, topographic relationships and soil-water resources; their characteristics, quality, suitability, and management; conservation practices; using soil maps to determine land use

PSS 6341 Controlled Environment Agriculture Laboratory: 1 hour. (Co-requisite: PSS 4343 for horticulture majors). Two hours laboratory. Online course. An experiential study of the principles and practices of controlled environments operation and management

PSS 6343 Controlled Environment Agriculture: 3 hours. (Prerequisites: BIO 2113 and PSS 3303; Co-requisite for horticulture majors: PSS 4341). Three hours lecture. Online Course. A detailed review and explanation of principles and practices of controlled environments operation and management

PSS 6353 Arboriculture and Landscape Maintenance: 3 hours. Two hours lecture. Two hours laboratory. Care of ornamental trees and shrubs, including pruning, bracing, surgery, transplanting, and fertilization

PSS 6363 Sustainable Nursery Production: 3 hours. Prerequisites: PSS 2423 and PSS 3303). Three hours lecture. Online course. Nursery crop production including site selection and planning, plant nutrition, water relations and irrigation, shipping, and managing people and resources

PSS 6373 Geospatial Agronomic Management: 3 hours. (Prerequisites: PSS 3303 and PSS 3133). Two hours lecture. Two hours laboratory. This class will utilize the basic tools of geographical information systems and geographical positioning systems technologies to analyze agronomic case studies

PSS 6411 Remote Sensing Seminar: 1 hour. One hour lecture. (Prerequisite: Junior Standing). Lectures by remote sensing experts from industry, academia, and governmental agencies on next-generation systems, applications, and economic and societal impact of remote (Same as ECE 4411/6411, FO 4411/6411, GR 4411/6411)

PSS 6413 Turfgrass Management: 3 hours. (Prerequisite: PSS 2113). Three hours lecture. An advanced comprehensive study of turfgrasses and the varied management strategies employed for golf and sports turf, home lawns, commercial turf, and sod production

PSS 6423 Golf Course Operations: 3 hours. (Prerequisite: PSS 4413/6413). Two hours lecture. Two hours laboratory. Scheduling maintenance practices, golf course construction and renovation with emphasis on operation and care of specialized turf equipment

PSS 6443 Athletic Field Management: 3 hours. (Prerequisite: PSS 3303, PSS 4413, or consent of instructor). Two hours lecture. Two hours laboratory. A comprehensive study of athletic fields, including construction, maintenance, renovation and management. Emphasis will be placed on interactions between soil properties and sports turf performance

PSS 6453 Vegetable Production: 3 hours. (Prerequisite: PSS 3303 and PSS 3301 or BIO 4204). Two hours lecture. Two hours laboratory. Principles and practices of commercial vegetable production

PSS 6483 Introduction to Remote Sensing Technologies: 3 hours. (Prerequisite: Senior or graduate standing, or consent of instructor). Three hours lecture. Electromagnetic interactions, passive sensors, multispectral and hyperspectral optical sensors, active sensors, imaging radar, SAR, Lidar, digital image processing, natural resource applications (Same as ECE 4423/6423 and ABE 4483/6483)

PSS 6503 Plant Breeding: 3 hours. (Prerequisite: PO 3103). Three hours lecture. Application of genetic principles to the improvement of economic crop plants; history, methods and procedures of plant breeding

PSS 6553 Plant Growth and Development: 3 hours. Three hours lecture. Online course. Structure of plant developmental processes and how environmental factors interact to affect and control plant growth and development

PSS 6603 Soil Chemistry: 3 hours. (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Fall semester, even-numbered years. Introduction to the basic chemistry of soils, including: mineral weathering/formation, ion exchange; adsorption, oxidation/reduction, acidity, salinity/alkalinity, and soil reactions of environmental importance

PSS 6613 Floriculture Crop Programming: 3 hours. (Prerequisite: PSS 4343/6343). Two hours lecture. Three hours laboratory. A detailed study of the techniques involved in the production of the major commercial flower crops

PSS 6633 Weed Biology and Ecology: 3 hours. (Prerequisites: BIO 21133. PSS 3133. Junior standing or consent of instructor). Two hours lecture. Two hours laboratory. Weed identification and population responses to agricultural production systems

PSS 6813 Herbicide Technology: 3 hours. (Prerequisites: PSS 3133 and junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides. A detailed look at herbicide application-field use and factors influencing herbicide activity. Credit may not be given for this course and PSS 4823/6823

PSS 6823 Turfgrass Weed Management: 3 hours. (Prerequisite: PSS 3133 and Junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides with emphasis on herbicides and emphasis on herbicides used in turfgrasses. Credit may not be given for this course and PSS 4813/6813

PSS 6833 Temperature Stress Physiology: 3 hours. (Prerequisite: BIO 4214/6214 or BCH 4013/6013). Three hours lecture. Online course. The course focuses on cellular structures and stress metabolites, thermodynamics, and signal transduction before addressing plan responses to heat, chilling, and freezing stresses

PSS 6990 Special Topics in Plant and Soil Sciences: 1-9 hours. Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years)

PSS 7000 Directed Individual Study in Plant and Soil Sciences: 1-6 hours. Hours and credits to be arranged

PSS 8000 Thesis Research/ Thesis in Plant and Soil Sciences: 1-13 hours. Hours and credits to be arranged

PSS 8103 Pasture Development: 3 hours. Three hours lecture. Utilization systems for forage crops in the southeast; adaption, morphology, identification, and physiology of grasses and legumes; analyses of forage quality; interpretation of forage research

PSS 8123 Crop Ecology: 3 hours. (Prerequisite: BIO 4213/6213 or consent of instructor). Three hours lecture. The geographical distribution, use, and adaptation of field crops as influenced by soil, climate, and other environmental factors

PSS 8163 Environmental Plant Physiology: 3 hours. Three hours lecture. The influences of physical factors of the environment on growth and development of crop plants

PSS 8203 Seed Physiology: 3 hours. (Prerequisite: PSS 4243/6243 or approval of instructor). Three hours lecture. Physiology of seed maturation, germination, dormancy, and deterioration, relation of seed quality to growth and development of plants

PSS 8333 Advanced Soil Fertility: 3 hours. (Prerequisite: Graduate standing). Two hours lecture. Three hours laboratory. Advanced course in soil fertility; special emphasis on all soil conditions affecting plant growth. Experimental techniques in plant nutrition and in soil fertility will be utilized

PSS 8343 Soil Plant Atmosphere Relationships: 3 hours. (Prerequisite: PSS 3301 and PSS 3303 or consent of instructor). Three hour lecture. Relationship of physical factors, water and heat, within the soil-plant-atmosphere continuum. Field-scale regimes including inputs, movement, and storage; emphasis on crop production

PSS 8513 Advanced Plant Breeding: 3 hours. (Prerequisite: PSS 4503/6503 or equivalent). Three hours lecture. An intensive review of methods of plant improvement and the application of these methods to modern plant breeding. (Same as PSS 8573, GNS 8113.)

PSS 8553 Phytohormones and Growth Regulations: 3 hours. (Prerequisites: BIO 4214/6214 and CH 2503). Three hours lecture. Plant growth regulating compounds: synthesis, metabolism, and effects on plant growth and development

PSS 8563 Post-Harvest Physiology of Horticultural Plants: 3 hours. (Prerequisites: Organic Chemistry and BIO 4214/6214 or equivalent). Three hours lecture. The nature, evaluation, and control of chemical and physiological changes that occur after harvest of horticultural products

PSS 8573 Morphology of Horticultural Plants: 3 hours. (Prerequisite: BIO 4204/6204). Three hours lecture. An intense review of methods of plant One hour lecture. Four hours improvement and the application of these methods to modern laboratory. Development of the floral and vegetative organs of horticultural plants. (Same as PSS 8513 and GNS 8113)

PSS 8631 Topics in Genomics: 1 hour. (Prerequisites: PSS/BCH 8653 BCH 4713/6713 or BCH 8643 or consent of instructor). Review and discussion of classic and current genomics literature; individual presentation of a seminar highlighting an area of genomics research. (Same as BCH 8631)

PSS 8634 Environmental Fate of Herbicides: 4 hours. (Prerequisites: CH 4513/6513, PSS 4813/6813). Three hours lecture. Three hours laboratory. Fate of herbicides, including of drift, volatility, metabolism, environmental factors that influence these processes

PSS 8645 Field Applications of Weed Sciences Principles I: 5 hours. (Prerequisite: PSS 6633 and PSS 6813 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in cotton soybean, and vegetables; application equipment calibration

PSS 8653 Genomes and Genomics: 3 hours. (Prerequisites: BCH 4113/6113 or BCH 4713/6713 or BCH 8643 or consent of instructor) Overview of genome structure and evolution with emphasis on genomics, the use of molecular biology, robotics, and advanced computational methods to efficiently study genomes. (Same as BCH 8653)

PSS 8655 Field Applications of Weed Science Principles II: 5 hours. (Prerequisite: PSS 8645 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in turf, field corn, rice, sorghum and pastures; application equipment calibration

PSS 8701 Current Topics in Weed Science: 1 hour. (Prerequisites: Graduate standing, PSS 4813/6813 or consent of instructor). Lecture, discussion and readings in selected areas of current interest in weed science. Maximum total credits in graduate program allowed, 4 hours-M.S.; 6 hours-Ph.D.

PSS 8711 Current Topics in Weed Science: 1 hour. (Prerequisite: Graduate standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8721 Current Topics in Weed Science: 1 hour. (Prerequisites: Graduate standing, PSS 4813/6813 or consent of instructor). Lecture, discussion and readings in selected areas of current interest in weed science. Maximum total credits in graduate program allowed, 4 hours-M.S.; 6 hours-Ph.D.

PSS 8724 Herbicide Physiology and Biochemistry: 4 hours. (Prerequisites: PSS 4813/6813, BIO 4214/6214 and CH 4513/6513 or consent of instructor). Three hours lecture. Three hours laboratory. Herbicide, plant growth regulator and allelochemic chemistry, mode of action, and effects on plants and plant constituents: fate/ persistence of herbicides in the environment

PSS 8731 Current Topics in Weed Science: 1 hour. (Prerequisite: Graduate standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8741 Current Topics in Weed Science: 1 hour.

PSS 8751 Current Topics in Weed Science: 1 hour.

PSS 8761 Current Topics in Weed Science: 1 hour.

PSS 8771 Current Topics in Weed Science: 1 hour.

PSS 8811 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8821 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8831 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8990 Special Topics in Plant and Soil Sciences: 1-9 hours. Credit and title to be arranged. This course is to be used Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two not covered in existing courses. (Courses limited to two offerings under one title within two academic years). Offerings under one title within two academic years)

PSS 9000 Dissertation Research /Dissertation in Plant and Soil Sciences: 1-13 hours. Hours and credits to be arranged. Hours and credits to be arranged.

ST 8114 Statistical Methods: 4 hours. (Prerequisite: MA 1313). Three hours lecture. Two hours laboratory. Fall and Spring semesters. Descriptive statistics; sampling distributions; inferences for one and two populations; completely random, block, Latin square, split-plot designs; factorials; simple linear regression; chi-square tests.

ST 8214 Design and Analysis of Experiments: 4 hours. (Prerequisite: ST 8114) Three hours lecture. Three hours laboratory. Offered spring semester. Procedures in planning and analyzing experiments; simple, multiple, and curvilinear regression; factorial arrangement of treatments; confounding; fractional replication; block designs; lattices; split-plots.

Appendix B
Faculty Discipline and Educational Backgrounds

NAME	COURSES TAUGHT	ACADEMIC DEGREES
Baldwin, Brian S.	PSS6503 Plant Breeding PSS 8513 Adv Plant Breeding PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (New Mexico State University, 1989) Master's: MS, Agronomy (New Mexico State University (1983) Bachelor's: BA, Biology (Bates College, 1980)
Baldwin, Christian	PSS 8000, Research / Thesis PSS 6423 Golf Course Operations PSS 6823 Turf Weed Mgmt	Doctorate: PHD, Plant/Environmental Sciences (Clemson University (2008) Master's: MS, Plant/Environmental Sciences (Clemson University, 2008 Bachelor's: BS, Management (Clemson University, 2000)
Bi, Guihong	PSS 8000, Research/Thesis PSS 9000, Research / Diss	Doctorate: PHD-Horticulture - Oregon State University (2004) Master's: MS-Biology - Shandong Agricultural University, China (1993) Bachelor's: BS-Horticulture - Shandong Agricultural University, China (1990)
Bond, Jason	PSS 8000, Research / Thesis	Doctorate: PHD, Crop Soil & Environmental Science (University of Arkansas, 2004) Master's: MS, Weed Science (Louisiana State University/ A&M, 2000) Bachelor's: BS, Crop Science (Louisiana State University, 1997)
Brown-Johnson, Ashli E.	BCH 6013 Principles of Biochemistry	Doctorate: PHD-Chemistry - University of South Florida(2003) Bachelor's: BA-Natural Sci Interdisciplinary - University of South Florida(1993)
Byrd, John D	PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Crop Science (North Carolina State University, Raleigh, 1989) Master's: MS, Crop Science (North Carolina State University, Raleigh, 1986) Bachelor's: BS, Agronomy (Clemson University, 1983)
Coker, Christine	PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Horticulture (Auburn University, 2001) Master's: MS, Biology (Austin Peay State University, 1998) Bachelor's: BA, Biology (University of Tennessee, Martin, 1996)
Cox, Michael S.	PSS 8000, Research / Thesis PSS 9000, Research / Diss PSS 6373 Geospatial Agn Mgt PSS 6603 Soil Chemistry PSS 8333 Adv Soil Fertility	Doctorate: PHD, Agronomy (Louisiana State University/A&M, 1995) Master's: MS, Agronomy (Purdue University, 1991) Bachelor's: BS, Crop & Soil Sciences (Purdue University, 1988)
DelPrince, James M.	PSS 6013 Princ of Floral Design PSS 6033 Problems Floral Mgt	Doctorate: PHD, Education (Mississippi State University, 1996) Master's: MS, Ag & Ext Education (Ohio State University, The, 1991) Bachelor's: BS, Horticulture (Ohio State University, The, 1989)
Denny, Geoffrey	PSS 6353, Arboriculture PSS 8000 Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Horticulture (Texas A&M University -Main Camp, 2007) Master's: MA, Biological Sciences/ Botany (University of Texas at Austin, 2002) Bachelor's: BS, Horticulture (Texas A&M University -Main Camp, 2000)
Dodds, Darrin Matthew	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Agricultural Science (Mississippi State University, 2007) Master's: MS, Botany & Plant Pathology (Purdue University, 2002) Bachelor's: BS, Agriculture (Western Illinois University, 1999)
DuBien, Janice L	ST 8214 Desn & Anal of Exp	Doctorate: PHD-Statistics - Oklahoma State University(1976) Master's: MS-Statistics - Oklahoma State University(1973) Bachelor's: BS-Mathematics - Illinois State University(1969)
Evans, William B.	PSS 8000, Research / Thesis	Doctorate: PHD, Crop & Soil Sciences (Michigan State University, 1995) Master's: MS, Horticulture (Oklahoma State University, 1988) Bachelor's: BS, Plant Science (Utah State University, 1985)

Golden, Bobby	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Crop, Soil, and Environmental Sciences-Soil Fertility (University of Arkansas, 2009) Master's: MS, Crop, Soil, and Environmental Sciences-Agronomy (University of Arkansas, 2005) Bachelor's: BS, Agricultural Economics-Farm Business Management (University of Arkansas, Monticello, 2003)
Harkess, Richard L.	PSS 6043, Intl Horticulture PSS 6113, Agricultural Crop Physi PSS 6341, Control Enviro Ag Lab PSS 6343, Control Enviro Ag, PSS 6363 Sustain Nursery Prod PSS 6553, Plant Growth Develop PSS 6613, Flo Crop Prog PSS 6833, Temp Stress Physi PSS 8553 Phytohorm Growth Reg PSS 8000, Research / Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Horticulture (Virginia Polytechnic Institute and State University, 1993) Master's: MS, Horticulture (Colorado State University, 1989) Bachelor's: BS, Horticulture (University of Minnesota, Twin Cities, 1987)
Henry, William Brien	PSS 6123, Grain Crops PSS 6411 Remote Sensing Sem PSS 8000, Research / Thesis	Doctorate: PHD, Weed Science (Mississippi State University, 2002) Master's: MS, Biological Sciences (Mississippi State University, 1999) Bachelor's: BS, Biology (Millsaps College, 1994)
Irby, Jon T.	PSS 8000 Research /Thesis	Doctorate: PHD-Agricultural Science-Mississippi State University (2012) Master's: MS-Agriculture - Mississippi State University (2009) Bachelor's: BS-Ag Eng Tech & Bus - Mississippi State University (2005)
Kingery, William L.	PSS 6314, Microbiol Ecology Soil PSS 6333, Soil Conservation PSS 8000, Research/Thesis PSS 8343 Soil Plant Atmos Relat PSS 9000, Research / Diss	Doctorate: PHD, Agronomy & Soils (Auburn University, 1994) Master's: MS, Agronomy (Louisiana State University/A&M, 1984) Bachelor's: BS, Agronomy (Louisiana State University/A&M, 1980)
Krutz, Larry J	PSS 8000, Research/Thesis	Doctorate: PHD - Agronomy (Texas A&M, 2004) Master's: MS - Agronomy (University of Arkansas, 2000) Bachelor's: BS - Agronomy (University of Arkansas, 1996)
Lang, David J.	PSS 6103, Forage Pasture, PSS 8000, Research/Thesis PSS 8123, Crop Ecology PSS 9000, Research / Diss	Doctorate: PHD, Plant Pathology (University of New Hampshire, 1986) Master's: MS, Plant & Soil Sciences (University of Maine, University, 1979) Bachelor's: BA, Biology (Gordon College, 1976)
Larson, Erick	PSS 8000, Research / Thesis	Doctorate: PHD, Agronomy (University of Nebraska at Lincoln, 1993) Master's: MS, Agronomy (Kansas State University, 1990) Bachelor's: BS, Agronomy (Kansas State University, 1988)
Lemus, Rocky W.	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Crop Soil & Env Science (Virginia Tech & State University, 2004) Master's: MS, Crop Production & Physiology (Iowa State University, 2000) Bachelor's: BS, Biology (Iowa State University, 1996)
Macoon, Bisoondat	PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (University of Florida, 1999) Master's: MS, Agronomy (University of Florida, 1992) Bachelor's: BS, Agriculture (University of Guyana, 1984)
Matta, Frank B.	PSS 6143, Adv Fruit Sci PSS 8573, Morphology Of Hort Pl PSS 8000, Research / Thesis, PSS 9000, Research / Diss, PSS 8563 Post-Harv Phy Hor Pl	Doctorate: PHD, Horticulture (Texas A&M University, 1977) Master's: MS, Horticulture (New Mexico State University, Dona Ana, 1974) Bachelor's: BS, Biology (New Mexico State University, Dona Ana, 1968)
McCurdy, James	PSS 8000, Research / Thesis,	Doctorate: PHD - Agronomy & Soils (Auburn, 2013) Master's: MS - Plant Sciences (University of Tennessee, Knoxville, 2008) Bachelor's: BS - Plant & Soil Sciences (University of Tennessee, Martin, 2006)

McDougald, Lynette L.	PSS 6023 Floral Management PSS 6073 Sympathy Floral Design PSS 6083 Flor Des Spec Events PSS 6093 PstHrvst Care Floral	Master's: MS, Ag & Ext Education (Mississippi State University, 2008) Bachelor's: BS, Horticulture (Mississippi State University, 1997)
Staff	PSS 8634, Environ Fate Herb PSS 8203 Seed Physiology PSS 8724 Herb Phys & Biochem	
Nagel, David H.	PSS 6453, Vegetable Production PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Soil Science (University of Florida, 1981) Master's: MS, Soil Science (University of Arkansas, 1977) Bachelor's: BS, Agronomy (Univ of Louisiana at Monroe, 1973)
Oldham, James L.	PSS 8000, Research / Thesis	Doctorate: PHD - Soil Science (University of Minnesota, 1997) Master's: MS - Soil Science/Plant Nutrition (University of Kentucky, 1992) Bachelor's: BS - Agriculture (Western Kentucky University, 1978)
Peterson, Daniel G	PSS 8653, Genomes & Genomics PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Botany (Colorado State University, 1998) Master's: MS, Botany (Colorado State University, 1993) Bachelor's: BS, Biological Sciences (Colorado State University, 1991)
Phillips, Jerry Michael	PSS 8811, Seminar PSS 8821, Seminar PSS 8831 Seminar PSS 8000, Research / Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Agriculture (University of Arkansas, 1985) Master's: MS, Agriculture (University of Arkansas, 1982) Bachelor's: BS, Agriculture (University of Arkansas, Monticello, 1980)
Reddy, Kambham R.	PSs 8163 Environ Plant Physiol PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Botany (Sri Venkaleswarea University, India, 1984) Master's: MS, Botany (Sri Venkaleswarea University, India, 1977) Bachelor's: BS, Botany (Sri Venkaleswarea University, India, 1975)
Reynolds, Daniel B.	PSS 8000, Research / Thesis PSS 9000, Research / Diss PSS 6813, Herbicide Techno PSS 6633 Weed Biology/Ecology PSS 8655 Field Appl Weed Sc Pr II PSS 8645 Field Appl Weed Sc Pr I PSS 8701, Cur Topics Weed Sci PSS 8711, Cur Topics Weed Sci PSS 8721, Cur Topics Weed Sci PSS 8731, Cur Topics Weed Sci	Doctorate: PHD, Crop Science (Oklahoma State University, 1986) Master's: MS, Agronomy (University of Arkansas, 1984) Bachelor's: BS, Agriculture (University of Arkansas, Monticello, 1980)
Rushing, Jason B.	PSS 8000, Research / Thesis	Doctorate: PHD, Agronomy (Mississippi State University, 20112) Master's: MS, Agronomy (Mississippi State University, 2009) Bachelor's: BS, Environmental Biology (Jacksonville State University, 2007)
Sarver, Jason	PSS 8000, Research / Thesis	Doctorate: PHD, Crop and Soil Science (University of Georgia, Tifton, 2014) Master's: MS, Plant and Soil Science (University of Kentucky, 2009) Bachelor's: BS, Biology (University of Kentucky, 2006)
Shankle, Mark	PSS 8000 Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy-Weed Science and Soils (Mississippi State University, 1999) Master's: MS, Plant and Soil Science-Weed Science (University of Tennessee, 1993) Bachelor's: BS, Plant and Soil Science (University of Tennessee, 1991) Bachelor's: BS, Agriculture Engineering Technology, 1987)
Shaw, David R	PSS 8000 Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (Oklahoma State University, 1985) Master's: MS, Agronomy (Oklahoma State University, 1983) Bachelor's: BS, Agriculture (Cameron University, 1981)
Stewart, Barry R.	PSS 6413, Turf Mgmt PSS 6443 Athletic Field Mgt PSS 8000, Research / Thesis,	Doctorate: PHD, Crop Soil & Env Science (Virginia Tech & State University, 1996) Master's: MS, Crop Soil & Env Science (Virginia Tech & State University, 1990) Bachelor's: BS, Agronomy (University of Wisconsin, River Falls, 1986)

Varco, Jac J.	PSS 6313, Soil Fertility PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Soil Science (University of Kentucky, 1986) Master's: MS, Soil Science (University of Florida, 1982) Bachelor's: BS, Soil Science (University of Florida, 1979)
Vaughan, Thomas	PSS 6223, Seed Production	Master's: MS - Seed Technology (Mississippi State University, 1987) Bachelor's: BS - Agronomy (Mississippi State University, 1983)
Wallace, Teddy P.	PSS 6133, Fiber & Oilseed Crops PSS 8000, Research / Thesis	Doctorate: PHD, Plant Breeding (Texas A&M University, 1987) Master's: MS, Genetics (Texas A&M University, 1985) Bachelor's: BS, Crop Science (Texas Tech University, 1979)
Woody, Jonathan R	ST 8114 Statistical Methods	Doctorate: PHD-Mathematical Sciences - Clemson University (2009) Master's: MS-Mathematics - Western Carolina University (2003) Bachelor's: BS-Mathematics - North Carolina State Univ At R(2000)

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College: Agriculture & Life Sciences **Department:** Plant and Soil Sciences

Contact Person: Dr. Mike Phillips **Mail Stop:** 9555 **E-mail:** mphillips@pss.msstate.edu

Nature of Change: Add New Degree – IHL Approval Required **Date Initiated:** 4 September 2014

Degree to be offered at: Starkville (Campus 1) **Effective Date:** Spring 2016

Current Degree Program Name:

Major: **Concentration:**

New Degree Program Name: Plant and Soil Sciences Master of Science

Major: Plant & Soil Sciences Master of Science

Concentrations: Agronomy, Horticulture, Weed Science

Summary of Proposed Changes:

This proposal will create the degree Plant and Soil Sciences Master of Science. Current Plant and Soil Sciences graduate students are enrolled under the Master of Science in Agriculture umbrella program in the College of Agriculture and Life Sciences. Creation of this degree program will provide our international and domestic students a more defined identity through a programmatically more specific and relevant CIP code. This program will not duplicate any other program in any of the private or public four-year institutions in Mississippi.

	Approved:	*Date:*
Department Head		9/15/14
Chair, College or School Curriculum Committee		10/28/14
Dean of College or School	For GH	10/29/14
Chair, University Committee on Courses and Curricula		
Chair, Graduate Council (if applicable)		
Chair, Deans Council		

[X] IHL Action Required

[ ] SACS Letter Sent

1. CATALOG DESCRIPTION

PROPOSED NEW DEGREE DESCRIPTION
Degree: Master of Science Major: Plant and Soil Sciences Master of Science Concentrations: Agronomy; Horticulture; Weed Science
Department Head: Dr. Mike Phillips Graduate Coordinator: Dr. Michael Cox 117 Dorman Hall PO Box 9555 Mississippi State, MS 39762 Telephone: 662-325-2311 E-mail: mcox@pss.msstate.edu Graduate study offered in the Department of Plant and Soil Sciences leads to the in Plant and Soil Sciences Master of Science degree with a concentration in Agronomy, Horticulture, or Weed Science and also to the Plant and Soil Sciences Doctorate degree with a concentration in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of opportunities for thesis and dissertation research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers fundamental and applied graduate research in agronomy, horticulture, weed science, plant breeding and genetics, molecular biology, crop modeling, soil science, crop physiology, turfgrass science, and remote sensing. Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. Each individual program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses. Graduate assistantships are provided, subject to availability of funds. An undergraduate grade point average of 3.0 or better on a 4.0 point scale is required to be eligible for an assistantship. Requests for additional information should be addressed to: Department Head Plant and Soil Sciences Box 9555 Mississippi State, MS 39762. Highly qualified undergraduates at Mississippi State University are encouraged to consider applying to the combined B.S./M.S. degree program. This program permits concurrent enrollment in the Agronomy or Horticulture B.S. and the Agronomy, Horticulture, or Weed Science M.S. degree programs during the student's final year of undergraduate studies with enrollment in up to nine hours of graduate courses for which undergraduate credit is also awarded. Students need to consult with a potential graduate advisor to ensure this graduate credit can be applied to a program of study for the M.S. degree. Application to the combined degree program may be made as early as the end of the junior year (i.e., after completion of 90 or more hours of graded undergraduate courses). This option is only available for students pursuing a thesis-based Master of Science degree in Agriculture with a concentration in Agronomy, Horticulture, or Weed Science.

Departmental Admission Criteria

M.S. in Plant and Soil Sciences and Ph.D. in Plant and Soil Sciences with concentrations in Agronomy, Horticulture, or Weed Science:

- GPA—
  For Master of Science: 2.75.
  For Doctor of Philosophy: 3.0 on graduate work
- TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Systems) score - TOEFL score of 500 PBT (173 CBT; 61 iBT) or IELTS score of 5.5.
- GRE— all graduate programs require submission of GRE scores.
- Non-thesis M.S. — a non-thesis M.S does not qualify toward admission to a Ph.D. program in the Department of Plant and Soil Sciences at Mississippi State University.

Requirements for entrance into the combined B.S./M.S. program in Agronomy, Horticulture, or Weed Science are:

1. a GPA of 3.50 or higher for all undergraduate work;
2. submission of a standard application for graduate studies in the Department of Plant and Soil Sciences along with application fee;
3. three letters of recommendation from individuals familiar with the applicant's academic performance;
4. submission of scores from the Graduate Record Examination (GRE) General Test prior to admission to the graduate program, and
5. a statement of professional interests and goals from the applicant, including specification of one or more potential major professors.

For students enrolled in a combined B.S./M.S. program, the MSU Graduate Council has established these guidelines in cooperation with the Registrar's Office:

Once the student is accepted into the combined program, the student and the advisor may select up to 9 hours that will satisfy both undergraduate and graduate requirements. These courses may be split-level (i.e., 4000-6000 level) or 8000 level classes, and the student should take the courses for graduate credit (i.e., 6000-level or higher). To do so, he/she must submit a completed form to the Office of the Graduate School requesting such permission: http://www.grad.msstate.edu/forms/pdf_forms/undergraduate_request_to_enroll_in_graduate_course.pdf. The OGS will notify the student by MSU email when the request is approved. The combination of undergraduate and graduate credit hours may not exceed 16 hours within a semester. After successfully completing the graduate-level classes, the student and undergraduate advisor will submit a request to the Registrar's Office to grant credit for the course also at the undergraduate level with the same grade awarded as received for the graduate course. In the case of a split-level class, the transcript will show credit for both the 4000- and 6000-level on the transcript. In the case of an 8000-level class, a special topics undergraduate course of the same title will be entered on the transcript to allow dual credit.

Students are permitted to opt out of the combined program at any time, at which point they could complete only the undergraduate portion of the program. No additional dual counting of courses would occur after the student leaves the combined program.

Students will receive the bachelor's degree once the requirements for that degree are met. Students will be required to complete all of the requirements for both the bachelor's and master's degrees in order to receive both degrees, and those requirements will be identical to the requirements for students enrolled in the traditional B.S. and M.S. programs. Students will be classified as undergraduates until they fulfill at the requirements for the undergraduate degree. At that time they will be classified as graduate students and will be subject to the guidelines pertaining to the M.S. degree. Students admitted to this program should read and understand the guidelines in the Department of Plant and Soil Sciences Graduate Student Handbook before registering for any courses for graduate credit.

Provisional Admission— A student who has not met the requirements stipulated by the University for admission to graduate study (GPA of 2.75) may be granted admission as a degree-seeking graduate student with provisional status. The student will be eligible for advancement to regular status after attaining a 3.00 GPA on the first 9 hours of graduate-level courses taken at Mississippi State University (courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement). If a GPA of 3.00 is not attained, the provisional student may be dismissed from the graduate program.

Leveling Courses- The Department of Plant and Soil Science recognizes that many students who hold bachelor degrees from other educational areas may wish to study towards an advance degree within the department. These students may come from areas with different requirements than those normally associated with Agronomy, Horticulture, or Weed Science. To increase the possibility of success in attaining the advanced degree, the department requires all graduate students to have a fundamental understanding of soil and plant science. To this end, all graduate students must have had at least one course in soil science equivalent to Soils (PSS 3303), a plant science course covering basic plant physiology, college mathematics, college chemistry, and college level biology. Graduate students who don't possess these courses upon acceptance will be required to complete these courses during the first or second semester of their attendance at Mississippi State University.

General Department Completion Requirements

M.S. — A thesis and an oral thesis defense are required. The graduate committee must approve the thesis topic, research proposal, program of study and final thesis.
M.S. Non-thesis. – A research paper approved by the student's graduate committee and an oral comprehensive exam are required.
Ph.D. — The dissertation is required of all candidates for the doctorate degree. Original research, a written and oral preliminary exam and an oral dissertation defense and exam are required. At least one semester of teaching experience is strongly encouraged. The graduate committee must approve the dissertation topic, research proposal, program of study, and final dissertation.

Academic Performance

Students in the M.S. and Ph.D. degree programs must maintain a 3.00 GPA after admission to the program. No grade below C will be accepted for graduate credit. More than two grades **(6 total hours)** of C or below constitute grounds for dismissal. Note: C grades for a course that is retaken and in which the student earns a grade of B or higher will not be included in the 6 total hours. However, the original grade is included as part of the calculation of the GPA. At any time, the student will lose any departmental assistantship should his/her cumulative GPA drop below a 3.0. Students with alternative sources of funding (scholarships, fellowships, etc.) must follow the rules and regulations of the funding source.

2. CURRICULUM OUTLINE

Proposed Curriculum

General Departmental Requirements

Concentrations may have additional requirements and/or restrictions.

Plant and Soil Sciences Master of Science - Thesis

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science – Non-Thesis

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree. Concentrations may have greater requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Departmental Graduate Degree Concentration Requirements

Plant and Soil Sciences Master of Science Agronomy Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science Agronomy Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Agronomy Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Plant and Soil Sciences Master of Science Horticulture Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.

[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science Horticulture Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Horticulture Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

BCH 6013 Principles of Biochemistry	3
PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8214 Design and Analysis of Experiments (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	15
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	44

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours, two graduate level statistics courses beyond the B.S. degree are required for the PhD in Horticulture. .

[4]The minimum coursework required for a PhD in Horticulture in Plant and Soil Sciences is 24 hours beyond the Master's degree requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Horticulture (Floral Management) Graduate Minor

PSS 6013 Principles of Floral Design	3
PSS 6023 Floral Management	3
PSS 6033 Case Studies in Floral Management	3
PSS 6043 International Horticulture	3
Total Hours	12

The graduate minor is available for graduate students seeking training in this field to complement their graduate degree. Students seeking the minor are required to complete the 12-hour program. The student's graduate committee must include a minor committee member from the Department of Plant and Soil Sciences.

Plant and Soil Sciences Master of Science Weed Science Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours. Up to 9 hours of PSS 8701-8771 Current Topics in Weed Science may be included to meet these requirements.

Plant and Soil Sciences Master of Science Weed Science Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Weed Science Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree requirements. Up to 9 hours of PSS 8701-8771 Current Topics in Weed Science may be included to meet these requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Expected Learning Outcomes

1. Students will be able to demonstrate a broad based knowledge in their respective discipline.

2. Students will demonstrate a broad based knowledge related to identification and management of issues in Mississippi and how these relate to issues regionally and globally within their respective discipline.

3. Students will know and understand current trends and important issues within their respective discipline.

4. Students will have a working knowledge of research methodology, experimental design, data management and interpretation.

5. Students will be able to communicate effectively with clientele and peers in their disciplines.

Assessment Methods.

Students in the Master of Science in Plants and Soils degree program will be required to complete the following before earning their degree.

M.S. – Thesis — Students must complete a minimum number of 30 credit hours with 12 credit hours at 8000 level or above plus 6 hours of research/thesis A graduate level statistics course and an exit seminar (PSS 8811) describing the thesis research are required as part of the credit hours. A thesis and an oral thesis defense are required. The graduate committee must approve the thesis topic, research proposal, program of study and final thesis.

M.S. - Non-thesis—A student in the M.S. non-thesis option program must successfully complete 30 credit hours of graduate level courses of which at least 15 must be courses numbered 8000 or above. Three credit hours of Directed Individual Study (PSS 7000) are required, in which the student must develop a research paper approved by the student's graduate committee. An oral comprehensive exam is required.

4. SUPPORT

See attached letter.

There will be no additional personnel or material support needed to support this degree program.

5. PROPOSED 4-LETTER ABBREVIATION

PSSM (Plant and Soil Sciences Master of Science)

6. EFFECTIVE DATE

Spring 2016

MISSISSIPPI STATE UNIVERSITY

Department of Plant and Soil Sciences

September 15, 2014

CALS Courses & Curriculum Committee
College of Agriculture and Life Sciences
Box 9760
Mississippi State, MS 39762

CALS CCC:

The PSS CCC as a committee discussed the proposed new Masters (M.S.) degree in Plants and Soils in the department of Plant and Soil Sciences. After considerable discussion, the committee in a unanimous vote supports the proposed graduate M.S. degree in Plant and Soil Sciences. The committee determined this is a needed addition to the PSS curricular program that will help build our programs and offer PSS graduates new career options. This program does not represent a duplication of effort from other programs offered in the department or at Mississippi State University.

Sincerely,

Richard L. Harkess, Chair
Plant and Soil Sciences Courses & Curriculum Committee

c: PSS CCCommittee
Michael Cox
Jim DelPrince
William Kingery
David Lang
Daniel Reynolds
Barry Stewart

c: Mike Phillips, Dept. Head, PSS

MISSISSIPPI STATE
UNIVERSITY

Department of Plant and Soil Sciences

September 16, 2014

Dr. Kirk Swortzel
Chair, University Committee on Courses and Curricula
Mailstop 9745
Lloyd-Ricks Watson, Room 215
Mississippi State, MS 39762

Dear Dr. Swortzel:

As a department, we feel separate graduate degree programs under Plant and Soil Sciences are warranted and appropriate. Mississippi State University currently confers the M.S. degree in Agriculture and the Ph.D. in Agricultural Sciences which includes students in the Department of Plant and Soil Sciences. We are proposing two new graduate degrees: Plant and Soil Sciences M.S. and Plant and Soil Sciences Ph.D. These degree programs will be in the Department of Plant and Soil Sciences under CIP Code 01.1101.

The primary factor in requesting this change comes from our stakeholders. They are very supportive of the change for several reasons. First, the current degree programs (Master of Science, Agriculture; Doctor of Philosophy, Agricultural Science) are very broad subject areas. Their feeling is that, for the sake of program identity, our degree programs should be more specifically defined with concentrations. The proposed degrees accurately define the degree programs as well as having specific PSS concentrations. The requested change also comes from prospective students. They are looking for programs with specific identity. Presently, we are losing out to programs who have degree programs in specific disciplines. Lastly, a specific PSS graduate degree program will greatly enhance opportunities for international students receiving the Doctor of Philosophy. After receiving the Doctor of Philosophy in Plant and Soil Sciences, they will have the opportunity to extend their postdoctoral training in the United States beyond six months.

In closing, many of our peer and peer plus institutions with programs in agriculture have degree programs very similar to our proposed programs. In order for us to remain competitive, to provide our graduates greater post graduate opportunities, and to enhance our program identity, we need to implement these programs. I am very hopeful these proposed degrees are supported. Please feel free to contact me if additional information is needed.

Respectfully submitted,

J. Mike Philips
Professor and Head

Appendix 7: Authorization to Plan a New Degree Program

Institution:		
Date of Implementation:	**Six Year Cost of Implementation:**	**Per Student Cost of Implementation:**
Spring 2016	Minimal	Minimal

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Plant and Soil Sciences Doctorate of Philosophy	01.1101

Degree(s) to be Awarded:	**Credit Hour Requirements:**
Doctor of Philosophy	30-50 (concentration dependent)

List any institutions within the state offering similar programs:

None

Responsible Academic Unit(s):	**Institutional Contact:**
Department of Plant and Soil Science	Dr. J. Michael Phillips

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	22	**Year One**	7
Year Two	22	**Year Two**	2
Year Three	29	**Year Three**	6
Year Four	24	**Year Four**	4
Year Five	31	**Year Five**	5
Year Six	31	**Year Six**	5
Total	159	**Total**	29

Program Summary:

Graduate study is offered leading to the Plant and Soil Sciences Doctor of Philosophy degree with concentrations in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of problems for dissertation research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers graduate programs in Plant Breeding and Genetics, Molecular Biology, Crop Modeling, Agronomy, Soil Science, Crop Physiology, Weed Science, Turfgrass Science, and Horticulture. Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. This program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses.

Institutional Executive Officer Signature **Date**

Institution:

1. Describe the proposed program and explain how it fits within the mission of the institution.

   The proposed program fulfills the land-grant missions of the institution in the research and teaching of plant and soil sciences. The program itself already exists at the university under the umbrella Doctor of Philosophy in Agriculture Science Degree Program. We are only asking to move this program to a more defined C.I.P. code

2. Provide the information used to determine Mississippi's need for this program. Be specific and provide supporting data (*supporting data must include employment statistics*).

   This program has maintained a steady number of degree graduates over the past six years. Institutional Effectiveness reports collected over the past 2 years indicate that 75% or greater of Ph.D. graduates are employed indicating that this program is meeting Mississippi's need for people trained in this area of science.

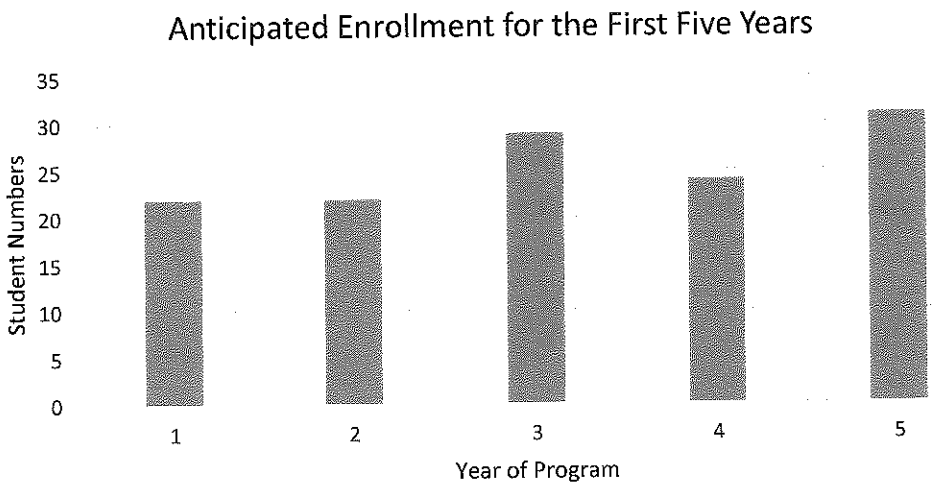
3. Describe the anticipated institutional impact including any research efforts associated with this program.

   As this program already exists under an umbrella Ph.D. program, and we are only requesting a change in the C.I.P code, there should be no impact to the institution.

4. Provide the total anticipated budget for the program. Indicate from where the funds will come.

   There should be no need for any additional funds for this program.

5. Use a chart to show anticipated enrollment for the first five years of the program.



6. Indicate where the proposed program is offered within the state
   a. Chart similarities and differences in the proposed program and those offered in other institutions
   b. Explain anticipated consequences on enrollment in other institutions offering the program, including any ramifications on the Ayers settlement

   This program is not offered anywhere else in the state.

7. What is the specific basis for formulating the number of graduates expected in the first six years?

As this program is currently offered under an umbrella degree, we used our historical enrollment data from the past six years.

Appendix 8: New Degree Program Proposal

Institution:		
Date of Implementation:	**Six Year Cost of Implementation:**	**Per Student Cost of Implementation:**
Spring 2016	Minimal	Minimal

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Plant and Soil Sciences Doctorate of Philosophy	01.1101

Degree(s) to be Awarded:	**Credit Hour Requirements:**
Doctor of Philosophy	30-50 (concentration dependent)

List any institutions within the state offering similar programs:

None

Responsible Academic Unit(s):	**Institutional Contact:**
Department of Plant and Soil Science	Dr. J. Michael Phillips

Check one of the boxes below related to SACS COC Substantive Changes.

[X] **Proposed Program is Not a Substantive Change**

[ ] **Proposed Program is a Substantive Change**

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	22	**Year One**	7
Year Two	22	**Year Two**	2
Year Three	29	**Year Three**	6
Year Four	24	**Year Four**	4
Year Five	31	**Year Five**	5
Year Six	31	**Year Six**	5
Total	159	**Total**	29

Program Summary:

Graduate study is offered leading to the Plant and Soil Sciences Doctor of Philosophy degree with concentrations in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of problems for dissertation research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers graduate programs in Plant Breeding and Genetics, Molecular Biology, Crop Modeling, Agronomy, Soil Science, Crop Physiology, Weed Science, Turfgrass Science, and Horticulture. Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. This program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses.

Institutional Executive Officer Signature **Date**

Institution:

1. Describe how the degree program will be administered including the name and title of person(s) who will be responsible for curriculum development and ongoing program review.

   The degree will be administered by a committee composed of faculty and the graduate coordinator within the Department of Plant and Soil Sciences. Dr. J. Michael Phillps (Department Head) will be responsible for curriculum development and program review.

2. Describe the educational objectives of the degree program including the specific objectives of any concentrations, emphases, options, specializations, tracks, etc.

   1. Students will be able to demonstrate a broad based knowledge in their respective discipline.
   2. Students will demonstrate a broad based knowledge related to identification and management of issues in Mississippi within their respective discipline.
   3. Students will know and understand current trends and important issues within their respective discipline.
   4. Students will have a working knowledge of data management and interpretation.
   5. Students will be able to communicate effectively with clientele.

3. Describe any special admission requirements for the degree program including any articulation agreements that have been negotiated or planned.

   None

4. Describe the professional accreditation that will be sought for this degree program. If a SACS visit for substantive change will be necessary, please note.

   None

5. Describe the curriculum for this degree program including the recommended course of study (appending course descriptions for all courses) and any special requirements such as clinical, field experience, community service, internships, practicum, a thesis, etc.

   Attached as Appendix A.

6. Describe the faculty who will deliver this degree program including the members' names, ranks, disciplines, current workloads, and specific courses they will teach within the program. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added.

   Attached as Appendix B.

7. Describe the library holdings relevant to the proposed program, noting strengths and weaknesses. If there are guidelines for the discipline, do current holdings meet or exceed standards?

   The library holdings are adequate for the proposed degree. The degree does not propose to add new courses in addition to those already offered on campus, thus library holdings should already be in place.

8. Describe the procedures for evaluation of the program and its effectiveness in the first six years of the program, including admission and retention rates, program outcome assessments, placement of graduates, changes in job market need/demand, ex-student/graduate surveys, or other procedures.

   Several criteria will be used to evaluate the success of this degree program in the first six years.

   1. Students will be advised by members of the graduate faculty in the Department of Plant and Soil Sciences. During the advisory sessions informal interviews will take place with the individual students concerning their progress in the program.

2. The departmental academic records assistant monitors graduation and retention rates and maintains a record of employment statistics after graduation. These records will be periodically reviewed and adjustments to the degree program will be made as needed.

3. The Dean of the College of Agriculture and Life Sciences maintains an advisory council for advice on teaching, research and service/extension activities within the College. This counsel is made up of alumni, employers, agency and organization representatives and other CALS constituents. This counsel will be consulted regularly for advice on changing job markets and desired educational requirements of graduates from this degree. In addition, the department will seek input on the perceived strengths and weaknesses of the proposed degree and changes in the degree will be made as needed.

4. Graduates are required to complete a thesis and an oral thesis defense or an oral comprehensive exam. The graduate committee must approve the thesis topic, research proposal, program of study and final thesis. This exam will serve as an occasion for the student to discuss their thoughts and opinions on their graduate experience.

5. In accordance with MSU policy on SACS Institutional Effectiveness requirements, an annual IE self-evaluation and report on the degree will be completed for the Plant and Soil Sciences Master of Science degree as is currently done for the Master of Science in Agriculture with concentrations in Agronomy, Horticulture and Weed Science currently offered by the department.

9. What is the specific basis for formulating the number of graduates expected in the first six years?

As this program is currently offered under an umbrella degree, we used our historical enrollment data from the past six years.

Appendix A
Course Descriptions

BCH 6013 Principles of Biochemistry: 3hours (Prerequisite: CH 2503, BIO 1134 or equivalent.) Three hours lecture. A survey of biochemistry designed to provide the non-major with a comprehensive background in the field. (Credit will not be given to students matriculating in the Biochemistry or Molecular Biology degree programs.)

PSS 6013 Principles of Floral Design: 3 hours. Online course. 2hours lectures, 2 hours lab. Focus on design principles, value-added products and longevity

PSS 6023 Floral Management: 3 hours. Three hours lecture. Online course. To identify and understand the basic principles necessary to operate wholesale and retail floral businesses

PSS 6033 Case Studies in Floral Management: 3 hours. Three hours lecture. Online course. (Prerequisites: PSS 2343 or PSS 6013 and graduate standing). Identification of current problems in floral management and the development of strategies for their resolution

PSS 6043 International Horticulture: 3 hours. (Prerequisite: PSS 1313). Three hours lecture. Online course. Worldwide overview of horticultural export, marketing, and international trade issues and individual country analyses of specific fruit, vegetable and ornamental crops

PSS 6073 Sympathy Floral Design: 3 hours. (Prerequisite PSS 2343). Two hours lecture. Two hours laboratory. Application of design theory and principles used in sympathy work

PSS 6083 Floral Design for Special Events: 3 hours. (Prerequisite: PSS 2343). Two hours lecture. Two hours laboratory. Planning and preparing of floral design compositions for use in special events

PSS 6093 Post-harvest Care of Cut Floral Crops: 3 hours. Two hours lecture. Two hours laboratory. Identification, postharvest care and handling, sourcing and distribution of cut floriculture plant materials

PSS 6103 Forage and Pasture Crops: 3 hours. Two hours lecture. Two hours laboratory. Origin, uses, and ecology of forage plants, establishment, nutritive value, use, yield and maintenance of forage plants as related to morphology, physiology and pasture management

PSS 6113 Agricultural Crop Physiology: 3 hours. Three hours lecture. Online course. Physiology of agricultural plants, including water relations, respiration, photosynthesis and growth and development

PSS 6123 Grain Crops: 3 hours. (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Corn, small grain, practice in commercial grading given in laboratory

PSS 6133 Fiber and Oilseed Crops: 3 hours. (Prerequisite: Junior standing). Three hours lecture. Production and utilization of fiber and oilseed crops. Emphasis on cotton and soybean production in Mississippi

PSS 6143 Advanced Fruit Science: 3 hours. (Prerequisite: PSS 3043 or equivalent). Three hours lecture. Three hours laboratory. A study of the latest advances in pomology and interpretation of current research findings and their application to modern fruit growing

PSS 6223 Seed Production: 3 hours. (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Principles and practices, special emphasis on production of varietally pure seeds; agronomic factors in harvesting, drying, storage, treating and marketing seed

PSS 6313 Soil Fertility and Fertilizers: 3 hours. (Prerequisites: PSS 3303 and Junior standing). Three hours lecture. Fundamentals and concepts of soil fertility; sources and responses of crops to plant nutrients; soil fertility evaluation and maintenance through fertilization

PSS 6314 Microbiology and Ecology of Soil: 4 hours. (Prerequisite: PSS 3303). The study of diverse soil microbial communities and how they influence the structure and function of ecosystems (natural and managed) and the global biosphere (same as BIO 4324/6324)

PSS 6323 Soil Classification: 3 hours. (Prerequisite: PSS 3303). Three hours lecture. Origin, development, and classification of soils including identification and field mapping

PSS 6333 Soil Conservation and Land Use: 3 hours. (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Soil identification, topographic relationships and soil-water resources; their characteristics, quality, suitability, and management; conservation practices; using soil maps to determine land use

PSS 6341 Controlled Environment Agriculture Laboratory: 1 hour. (Co-requisite: PSS 4343 for horticulture majors). Two hours laboratory. Online course. An experiential study of the principles and practices of controlled environments operation and management

PSS 6343 Controlled Environment Agriculture: 3 hours. (Prerequisites: BIO 2113 and PSS 3303; Co-requisite for horticulture majors: PSS 4341). Three hours lecture. Online Course. A detailed review and explanation of principles and practices of controlled environments operation and management

PSS 6353 Arboriculture and Landscape Maintenance: 3 hours. Two hours lecture. Two hours laboratory. Care of ornamental trees and shrubs, including pruning, bracing, surgery, transplanting, and fertilization

PSS 6363 Sustainable Nursery Production: 3 hours. Prerequisites: PSS 2423 and PSS 3303). Three hours lecture. Online course. Nursery crop production including site selection and planning, plant nutrition, water relations and irrigation, shipping, and managing people and resources

PSS 6373 Geospatial Agronomic Management: 3 hours. (Prerequisites: PSS 3303 and PSS 3133). Two hours lecture. Two hours laboratory. This class will utilize the basic tools of geographical information systems and geographical positioning systems technologies to analyze agronomic case studies

PSS 6411 Remote Sensing Seminar: 1 hour. One hour lecture. (Prerequisite: Junior Standing). Lectures by remote sensing experts from industry, academia, and governmental agencies on next-generation systems, applications, and economic and societal impact of remote (Same as ECE 4411/6411, FO 4411/6411, GR 4411/6411)

PSS 6413 Turfgrass Management: 3 hours. (Prerequisite: PSS 2113). Three hours lecture. An advanced comprehensive study of turfgrasses and the varied management strategies employed for golf and sports turf, home lawns, commercial turf, and sod production

PSS 6423 Golf Course Operations: 3 hours. (Prerequisite: PSS 4413/6413). Two hours lecture. Two hours laboratory. Scheduling maintenance practices, golf course construction and renovation with emphasis on operation and care of specialized turf equipment

PSS 6443 Athletic Field Management: 3 hours. (Prerequisite: PSS 3303, PSS 4413, or consent of instructor). Two hours lecture. Two hours laboratory. A comprehensive study of athletic fields, including construction, maintenance, renovation and management. Emphasis will be placed on interactions between soil properties and sports turf performance

PSS 6453 Vegetable Production: 3 hours. (Prerequisite: PSS 3303 and PSS 3301 or BIO 4204). Two hours lecture. Two hours laboratory. Principles and practices of commercial vegetable production

PSS 6483 Introduction to Remote Sensing Technologies: 3 hours. (Prerequisite: Senior or graduate standing, or consent of instructor). Three hours lecture. Electromagnetic interactions, passive sensors, multispectral and hyperspectral optical sensors, active sensors, imaging radar, SAR, Lidar, digital image processing, natural resource applications (Same as ECE 4423/6423 and ABE 4483/6483)

PSS 6503 Plant Breeding: 3 hours. (Prerequisite: PO 3103). Three hours lecture. Application of genetic principles to the improvement of economic crop plants; history, methods and procedures of plant breeding

PSS 6553 Plant Growth and Development: 3 hours. Three hours lecture. Online course. Structure of plant developmental processes and how environmental factors interact to affect and control plant growth and development

PSS 6603 Soil Chemistry: 3 hours. (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Fall semester, even-numbered years. Introduction to the basic chemistry of soils, including: mineral weathering/formation, ion exchange; adsorption, oxidation/reduction, acidity, salinity/alkalinity, and soil reactions of environmental importance

PSS 6613 Floriculture Crop Programming: 3 hours. (Prerequisite: PSS 4343/6343). Two hours lecture. Three hours laboratory. A detailed study of the techniques involved in the production of the major commercial flower crops

PSS 6633 Weed Biology and Ecology: 3 hours. (Prerequisites: BIO 21133. PSS 3133. Junior standing or consent of instructor). Two hours lecture. Two hours laboratory. Weed identification and population responses to agricultural production systems

PSS 6813 Herbicide Technology: 3 hours. (Prerequisites: PSS 3133 and junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides. A detailed look at herbicide application-field use and factors influencing herbicide activity. Credit may not be given for this course and PSS 4823/6823

PSS 6823 Turfgrass Weed Management: 3 hours. (Prerequisite: PSS 3133 and Junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides with emphasis on herbicides and emphasis on herbicides used in turfgrasses. Credit may not be given for this course and PSS 4813/6813

PSS 6833 Temperature Stress Physiology: 3 hours. (Prerequisite: BIO 4214/6214 or BCH 4013/6013). Three hours lecture. Online course. The course focuses on cellular structures and stress metabolites, thermodynamics, and signal transduction before addressing plan responses to heat, chilling, and freezing stresses

PSS 6990 Special Topics in Plant and Soil Sciences: 1-9 hours. Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years)

PSS 7000 Directed Individual Study in Plant and Soil Sciences: 1-6 hours. Hours and credits to be arranged

PSS 8000 Thesis Research/ Thesis in Plant and Soil Sciences: 1-13 hours. Hours and credits to be arranged

PSS 8103 Pasture Development: 3 hours. Three hours lecture. Utilization systems for forage crops in the southeast; adaption, morphology, identification, and physiology of grasses and legumes; analyses of forage quality; interpretation of forage research

PSS 8123 Crop Ecology: 3 hours. (Prerequisite: BIO 4213/6213 or consent of instructor). Three hours lecture. The geographical distribution, use, and adaptation of field crops as influenced by soil, climate, and other environmental factors

PSS 8163 Environmental Plant Physiology: 3 hours. Three hours lecture. The influences of physical factors of the environment on growth and development of crop plants

PSS 8203 Seed Physiology: 3 hours. (Prerequisite: PSS 4243/6243 or approval of instructor). Three hours lecture. Physiology of seed maturation, germination, dormancy, and deterioration, relation of seed quality to growth and development of plants

PSS 8333 Advanced Soil Fertility: 3 hours. (Prerequisite: Graduate standing). Two hours lecture. Three hours laboratory. Advanced course in soil fertility; special emphasis on all soil conditions affecting plant growth. Experimental techniques in plant nutrition and in soil fertility will be utilized

PSS 8343 Soil Plant Atmosphere Relationships: 3 hours. (Prerequisite: PSS 3301 and PSS 3303 or consent of instructor). Three hour lecture. Relationship of physical factors, water and heat, within the soil-plant-atmosphere continuum. Field-scale regimes including inputs, movement, and storage; emphasis on crop production

PSS 8513 Advanced Plant Breeding: 3 hours. (Prerequisite: PSS 4503/6503 or equivalent). Three hours lecture. An intensive review of methods of plant improvement and the application of these methods to modern plant breeding. (Same as PSS 8573, GNS 8113.)

PSS 8553 Phytohormones and Growth Regulations: 3 hours. (Prerequisites: BIO 4214/6214 and CH 2503). Three hours lecture. Plant growth regulating compounds: synthesis, metabolism, and effects on plant growth and development

PSS 8563 Post-Harvest Physiology of Horticultural Plants: 3 hours. (Prerequisites: Organic Chemistry and BIO 4214/6214 or equivalent). Three hours lecture. The nature, evaluation, and control of chemical and physiological changes that occur after harvest of horticultural products

PSS 8573 Morphology of Horticultural Plants: 3 hours. (Prerequisite: BIO 4204/6204). Three hours lecture. An intense review of methods of plant One hour lecture. Four hours improvement and the application of these methods to modern laboratory. Development of the floral and vegetative organs of horticultural plants. (Same as PSS 8513 and GNS 8113)

PSS 8631 Topics in Genomics: 1 hour. (Prerequisites: PSS/BCH 8653 BCH 4713/6713 or BCH 8643 or consent of instructor). Review and discussion of classic and current genomics literature; individual presentation of a seminar highlighting an area of genomics research. (Same as BCH 8631)

PSS 8634 Environmental Fate of Herbicides: 4 hours. (Prerequisites: CH 4513/6513, PSS 4813/6813). Three hours lecture. Three hours laboratory. Fate of herbicides, including of drift, volatility, metabolism, environmental factors that influence these processes

PSS 8645 Field Applications of Weed Sciences Principles I: 5 hours. (Prerequisite: PSS 6633 and PSS 6813 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in cotton soybean, and vegetables; application equipment calibration

PSS 8653 Genomes and Genomics: 3 hours. (Prerequisites: BCH 4113/6113 or BCH 4713/6713 or BCH 8643 or consent of instructor) Overview of genome structure and evolution with emphasis on genomics, the use of molecular biology, robotics, and advanced computational methods to efficiently study genomes. (Same as BCH 8653)

PSS 8655 Field Applications of Weed Science Principles II: 5 hours. (Prerequisite: PSS 8645 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in turf, field corn, rice, sorghum and pastures; application equipment calibration

PSS 8701 Current Topics in Weed Science: 1 hour. (Prerequisites: Graduate standing, PSS 4813/6813 or consent of instructor). Lecture, discussion and readings in selected areas of current interest in weed science. Maximum total credits in graduate program allowed, 4 hours-M.S.; 6 hours-Ph.D.

PSS 8711 Current Topics in Weed Science: 1 hour. (Prerequisite: Graduate standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8721 Current Topics in Weed Science: 1 hour. (Prerequisites: Graduate standing, PSS 4813/6813 or consent of instructor). Lecture, discussion and readings in selected areas of current interest in weed science. Maximum total credits in graduate program allowed, 4 hours-M.S.; 6 hours-Ph.D.

PSS 8724 Herbicide Physiology and Biochemistry: 4 hours. (Prerequisites: PSS 4813/6813, BIO 4214/6214 and CH 4513/6513 or consent of instructor). Three hours lecture. Three hours laboratory. Herbicide, plant growth regulator and allelochemic chemistry, mode of action, and effects on plants and plant constituents: fate/ persistence of herbicides in the environment

PSS 8731 Current Topics in Weed Science: 1 hour. (Prerequisite: Graduate standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8741 Current Topics in Weed Science: 1 hour.

PSS 8751 Current Topics in Weed Science: 1 hour.

PSS 8761 Current Topics in Weed Science: 1 hour.

PSS 8771 Current Topics in Weed Science: 1 hour.

PSS 8811 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8821 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8831 Seminar: 1 hour. (Prerequisites: Graduate Standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars

PSS 8990 Special Topics in Plant and Soil Sciences: 1-9 hours. Credit and title to be arranged. This course is to be used Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two not covered in existing courses. (Courses limited to two offerings under one title within two academic years). Offerings under one title within two academic years)

PSS 9000 Dissertation Research /Dissertation in Plant and Soil Sciences: 1-13 hours. Hours and credits to be arranged. Hours and credits to be arranged.

ST 8114 Statistical Methods: 4 hours. (Prerequisite: MA 1313). Three hours lecture. Two hours laboratory. Fall and Spring semesters. Descriptive statistics; sampling distributions; inferences for one and two populations; completely random, block, Latin square, split-plot designs; factorials; simple linear regression; chi-square tests.

ST 8214 Design and Analysis of Experiments: 4 hours. (Prerequisite: ST 8114) Three hours lecture. Three hours laboratory. Offered spring semester. Procedures in planning and analyzing experiments; simple, multiple, and curvilinear regression; factorial arrangement of treatments; confounding; fractional replication; block designs; lattices; split-plots.

Appendix B
Faculty Discipline and Educational Backgrounds

NAME	COURSES TAUGHT	ACADEMIC DEGREES
Baldwin, Brian S.	PSS6503 Plant Breeding PSS 8513 Adv Plant Breeding PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (New Mexico State University, 1989) Master's: MS, Agronomy (New Mexico State University (1983) Bachelor's: BA, Biology (Bates College, 1980)
Baldwin, Christian	PSS 8000, Research / Thesis PSS 6423 Golf Course Operations PSS 6823 Turf Weed Mgmt	Doctorate: PHD, Plant/Environmental Sciences (Clemson University (2008) Master's: MS, Plant/Environmental Sciences (Clemson University, 2008 Bachelor's: BS, Management (Clemson University, 2000)
Bi, Guihong	PSS 8000, Research/Thesis PSS 9000, Research / Diss	Doctorate: PHD-Horticulture - Oregon State University (2004) Master's: MS-Biology - Shandong Agricultural University, China (1993) Bachelor's: BS-Horticulture - Shandong Agricultural University, China (1990)
Bond, Jason	PSS 8000, Research / Thesis	Doctorate: PHD, Crop Soil & Environmental Science (University of Arkansas, 2004) Master's: MS, Weed Science (Louisiana State University/ A&M, 2000) Bachelor's: BS, Crop Science (Louisiana State University, 1997)
Brown-Johnson, Ashli E.	BCH 6013 Principles of Biochemistry	Doctorate: PHD-Chemistry - University of South Florida(2003) Bachelor's: BA-Natural Sc Interdisciplinary - University of South Florida(1993)
Byrd, John D	PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Crop Science (North Carolina State University, Raleigh, 1989) Master's: MS, Crop Science (North Carolina State University, Raleigh, 1986) Bachelor's: BS, Agronomy (Clemson University, 1983)
Coker, Christine	PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Horticulture (Auburn University, 2001) Master's: MS, Biology (Austin Peay State University, 1998) Bachelor's: BA, Biology (University of Tennessee, Martin, 1996)
Cox, Michael S.	PSS 8000, Research / Thesis PSS 9000, Research / Diss PSS 6373 Geospatial Agn Mgt PSS 6603 Soil Chemistry PSS 8333 Adv Soil Fertility	Doctorate: PHD, Agronomy (Louisiana State University/A&M, 1995) Master's: MS, Agronomy (Purdue University, 1991) Bachelor's: BS, Crop & Soil Sciences (Purdue University, 1988)
DelPrince, James M.	PSS 6013 Princ of Floral Design PSS 6033 Problems Floral Mgt	Doctorate: PHD, Education (Mississippi State University, 1996) Master's: MS, Ag & Ext Education (Ohio State University, The, 1991) Bachelor's: BS, Horticulture (Ohio State University, The, 1989)
Denny, Geoffrey	PSS 6353, Arboriculture PSS 8000 Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Horticulure (Texas A&M University -Main Camp, 2007) Master's: MA, Biological Sciences/ Botany (University of Texas at Austin, 2002) Bachelor's: BS, Horticulture (Texas A&M University -Main Camp, 2000)
Dodds, Darrin Matthew	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Agricultural Science (Mississippi State University, 2007) Master's: MS, Botany & Plant Pathology (Purdue University, 2002) Bachelor's: BS, Agriculture (Western Illinois University, 1999)
DuBien, Janice L	ST 8214 Desn & Anal of Exp	Doctorate: PHD-Statistics - Oklahoma State University(1976) Master's: MS-Statistics - Oklahoma State University(1973) Bachelor's: BS-Mathematics - Illinois State University(1969)
Evans, William B.	PSS 8000, Research / Thesis	Doctorate: PHD, Crop & Soil Sciences (Michigan State University, 1995) Master's: MS, Horticulture (Oklahoma State University, 1988) Bachelor's: BS, Plant Science (Utah State University, 1985)

Golden, Bobby	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Crop, Soil, and Environmental Sciences-Soil Fertility (University of Arkansas, 2009) Master's: MS, Crop, Soil, and Environmental Sciences-Agronomy (University of Arkansas, 2005) Bachelor's: BS, Agricultural Economics-Farm Business Management (University of Arkansas, Monticello, 2003)
Harkess, Richard L.	PSS 6043, Intl Horticulture PSS 6113, Agricultural Crop Physi PSS 6341, Control Enviro Ag Lab PSS 6343, Control Enviro Ag, PSS 6363 Sustain Nursery Prod PSS 6553, Plant Growth Develop PSS 6613, Flo Crop Prog PSS 6833, Temp Stress Physi PSS 8553 Phytohorm Growth Reg PSS 8000, Research / Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Horticulture (Virginia Polytechnic Institute and State University, 1993) Master's: MS, Horticulture (Colorado State University, 1989) Bachelor's: BS, Horticulture (University of Minnesota, Twin Cities, 1987)
Henry, William Brien	PSS 6123, Grain Crops PSS 6411 Remote Sensing Sem PSS 8000, Research / Thesis	Doctorate: PHD, Weed Science (Mississippi State University, 2002) Master's: MS, Biological Sciences (Mississippi State University, 1999) Bachelor's: BS, Biology (Millsaps College, 1994)
Irby, Jon T.	PSS 8000 Research /Thesis	Doctorate: PHD-Agricultural Science-Mississippi State University (2012) Master's: MS-Agriculture - Mississippi State University (2009) Bachelor's: BS-Ag Eng Tech & Bus - Mississippi State Universtiy (2005)
Kingery, William L.	PSS 6314, Microbiol Ecology Soil PSS 6333, Soil Conservation PSS 8000, Research/Thesis PSS 8343 Soil Plant Atmos Relat PSS 9000, Research / Diss	Doctorate: PHD, Agronomy & Soils (Auburn University, 1994) Master's: MS, Agronomy (Louisiana State University/A&M, 1984) Bachelor's: BS, Agronomy (Louisiana State University/A&M, 1980)
Krutz, Larry J	PSS 8000, Research/Thesis	Doctorate: PHD - Agronomy (Texas A&M, 2004) Master's: MS - Agronomy (University of Arkansas, 2000) Bachelor's: BS - Agronomy (University of Arkansas, 1996)
Lang, David J.	PSS 6103, Forage Pasture, PSS 8000, Research/Thesis PSS 8123, Crop Ecology PSS 9000, Research / Diss	Doctorate: PHD, Plant Pathology (University of New Hampshire, 1986) Master's: MS, Plant & Soil Sciences (University of Maine, University, 1979) Bachelor's: BA, Biology (Gordon College, 1976)
Larson, Erick	PSS 8000, Research / Thesis	Doctorate: PHD, Agronomy (University of Nebraska at Lincoln, 1993) Master's: MS, Agronomy (Kansas State University, 1990) Bachelor's: BS, Agronomy (Kansas State University, 1988)
Lemus, Rocky W.	PSS 8000, Research / Thesis PSS 9000 Research / Diss	Doctorate: PHD, Crop Soil & Env Science (Virginia Tech & State University, 2004) Master's: MS, Crop Production & Physiology (Iowa State University, 2000) Bachelor's: BS, Biology (Iowa State University, 1996)
Macoon, Bisoondat	PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (University of Florida, 1999) Master's: MS, Agronomy (University of Florida, 1992) Bachelor's: BS, Agriculture (University of Guyana, 1984)
Matta, Frank B.	PSS 6143, Adv Fruit Sci PSS 8573, Morphology Of Hort Pl PSS 8000, Research / Thesis, PSS 9000, Research / Diss, PSS 8563 Post-Harv Phy Hor Pl	Doctorate: PHD, Horticulture (Texas A&M University, 1977) Master's: MS, Horticulture (New Mexico State University, Dona Ana, 1974) Bachelor's: BS, Biology (New Mexico State University, Dona Ana, 1968)
McCurdy, James	PSS 8000, Research / Thesis,	Doctorate: PHD - Agronomy & Soils (Auburn, 2013) Master's: MS - Plant Sciences (University of Tennessee, Knoxville, 2008) Bachelor's: BS - Plant & Soil Sciences (University of Tennessee, Martin, 2006)

McDougald, Lynette L.	PSS 6023 Floral Management PSS 6073 Sympathy Floral Design PSS 6083 Flor Des Spec Events PSS 6093 PstHrvst Care Floral	Master's: MS, Ag & Ext Education (Mississippi State University, 2008) Bachelors's: BS, Horticulture (Mississippi State University, 1997)
Staff	PSS 8634, Environ Fate Herb PSS 8203 Seed Physiology PSS 8724 Herb Phys & Biochem	
Nagel, David H.	PSS 6453, Vegetable Production PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Soil Science (University of Florida, 1981) Master's: MS, Soil Science (University of Arkansas, 1977) Bachelor's: BS, Agronomy (Univ of Louisiana at Monroe, 1973)
Oldham, James L.	PSS 8000, Research / Thesis	Doctorate: PHD - Soil Science (University of Minnesota, 1997) Master's: MS - Soil Science/Plant Nutrition (University of Kentucky, 1992) Bachelor's: BS - Agriculture (Western Kentucky University, 1978)
Peterson, Daniel G	PSS 8653, Genomes & Genomics PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Botany (Colorado State University, 1998) Master's: MS, Botany (Colorado State University, 1993) Bachelor's: BS, Biological Sciences (Colorado State University, 1991)
Phillips, Jerry Michael	PSS 8811, Seminar PSS 8821, Seminar PSS 8831 Seminar PSS 8000, Research / Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Agriculture (University of Arkansas, 1985) Master's: MS, Agriculture (University of Arkansas, 1982) Bachelor's: BS, Agriculture (University of Arkansas, Monticello, 1980)
Reddy, Kambham R.	PSs 8163 Environ Plant Physiol PSS 8000, Research/Thesis PSS 9000, Research / Diss,	Doctorate: PHD, Botany (Sri Venkaleswarea University, India, 1984) Master's: MS, Botany (Sri Venkaleswarea University, India, 1977) Bachelor's: BS, Botany (Sri Venkaleswarea University, India, 1975)
Reynolds, Daniel B.	PSS 8000, Research / Thesis PSS 9000, Research / Diss PSS 6813, Herbicide Techno PSS 6633 Weed Biology/Ecology PSS 8655 Field Appl Weed Sc Pr II PSS 8645 Field Appl Weed Sc Pr I PSS 8701, Cur Topics Weed Sci PSS 8711, Cur Topics Weed Sci PSS 8721, Cur Topics Weed Sci PSS 8731, Cur Topics Weed Sci	Doctorate: PHD, Crop Science (Oklahoma State University, 1986) Master's: MS, Agronomy (University of Arkansas, 1984) Bachelor's: BS, Agriculture (University of Arkansas, Monticello, 1980)
Rushing, Jason B.	PSS 8000, Research / Thesis	Doctorate: PHD, Agronomy (Mississippi State University, 20112) Master's: MS, Agronomy (Mississippi State University, 2009) Bachelor's: BS, Environmental Biology (Jacksonville State University, 2007)
Sarver, Jason	PSS 8000, Research / Thesis	Doctorate: PHD, Crop and Soil Science (University of Georgia, Tifton, 2014) Master's: MS, Plant and Soil Science (University of Kentucky, 2009) Bachelor's: BS, Biology (University of Kentucky, 2006)
Shankle, Mark	PSS 8000 Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy-Weed Science and Soils (Mississippi State University, 1999) Master's: MS, Plant and Soil Science-Weed Science (University of Tennessee, 1993) Bachelor's: BS, Plant and Soil Science (University of Tennessee, 1991) Bachelor's: BS, Agriculture Engineering Technology, 1987)
Shaw, David R	PSS 8000 Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Agronomy (Oklahoma State University, 1985) Master's: MS, Agronomy (Oklahoma State University, 1983) Bachelor's: BS, Agriculture (Cameron University, 1981)
Stewart, Barry R.	PSS 6413, Turf Mgmt PSS 6443 Athletic Field Mgt PSS 8000, Research / Thesis,	Doctorate: PHD, Crop Soil & Env Science (Virginia Tech & State University, 1996) Master's: MS, Crop Soil & Env Science (Virginia Tech & State University, 1990) Bachelor's: BS, Agronomy (University of Wisconsin, River Falls, 1986)

Varco, Jac J.	PSS 6313, Soil Fertility PSS 8000, Research / Thesis PSS 9000, Research / Diss	Doctorate: PHD, Soil Science (University of Kentucky, 1986) Master's: MS, Soil Science (University of Florida, 1982) Bachelor's: BS, Soil Science (University of Florida, 1979)
Vaughan, Thomas	PSS 6223, Seed Production	Master's: MS - Seed Technology (Mississippi State University, 1987) Bachelor's: BS - Agronomy (Mississippi State University, 1983)
Wallace, Teddy P.	PSS 6133, Fiber & Oilseed Crops PSS 8000, Research / Thesis	Doctorate: PHD, Plant Breeding (Texas A&M University, 1987) Master's: MS, Genetics (Texas A&M University, 1985) Bachelor's: BS, Crop Science (Texas Tech University, 1979)
Woody, Jonathan R	ST 8114 Statistical Methods	Doctorate: PHD-Mathematical Sciences - Clemson University (2009) Master's: MS-Mathematics - Western Carolina University (2003) Bachelor's: BS-Mathematics - North Carolina State Univ At R(2000)

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College: Agriculture & Life Sciences **Department:** Plant and Soil Sciences

Contact Person: Dr. Mike Phillips **Mail Stop:** 9555 **E-mail:** mphillips@pss.msstate.edu

Nature of Change: Add New Degree – IHL Approval Required **Date Initiated:** 4 September 2014

Degree to be offered at: Starkville (Campus 1) **Effective Date:** Spring 2016

Current Degree Program Name:

Major: **Concentration:**

New Degree Program Name: Plant and Soil Sciences Doctor of Philosophy

Major: Plant & Soil Sciences Doctor of Philosophy

Concentrations: Agronomy, Horticulture, Weed Science

Summary of Proposed Changes:
This proposal will create the degree Plant and Soil Sciences Doctorate of Philosophy. Current Plant and Soil Sciences graduate students are enrolled under the Doctorate in Agricultural Sciences umbrella program in the College of Agriculture and Life Sciences. Creation of this degree program will provide our international and domestic students a more defined identity through a programmatically more specific and relevant CIP code. This program will not duplicate any other program in any of the private or public four-year institutions in Mississippi.

Approved:	*Date:*
Department Head	9/15/14
Chair, College or School Curriculum Committee	10/28/14
Dean of College or School	10/29/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

[X] IHL Action Required

[ ] SACS Letter Sent

1. CATALOG DESCRIPTION

PROPOSED NEW DEGREE DESCRIPTION
Degree: Doctorate of Philosophy Major: Plant and Soil Sciences Doctorate of Philosophy Concentrations in Agronomy; Horticulture; Weed Science

Department Head: Dr. Mike Phillips
Graduate Coordinator: Dr. Michael Cox
117 Dorman Hall
PO Box 9555
Mississippi State, MS 39762
Telephone: 662-325-2311
E-mail: mcox@pss.msstate.edu

Graduate study offered in the Department of Plant and Soil Sciences leads to the in Plant and Soil Sciences Master of Science degree with a concentration in Agronomy, Horticulture, or Weed Science and also to the Plant and Soil Sciences Doctorate degree with a concentration in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of opportunities for thesis and dissertation research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers fundamental and applied graduate research in agronomy, horticulture, weed science, plant breeding and genetics, molecular biology, crop modeling, soil science, crop physiology, turfgrass science, and remote sensing.

Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. Each individual program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses. Graduate assistantships are provided, subject to availability of funds. An undergraduate grade point average of 3.0 or better on a 4.0 point scale is required to be eligible for an assistantship. Requests for additional information should be addressed to:

Department Head
Plant and Soil Sciences
Box 9555
Mississippi State, MS 39762.

Highly qualified undergraduates at Mississippi State University are encouraged to consider applying to the combined B.S./M.S. degree program. This program permits concurrent enrollment in the Agronomy or Horticulture B.S. and the Agronomy, Horticulture, or Weed Science M.S. degree programs during the student's final year of undergraduate studies with enrollment in up to nine hours of graduate courses for which undergraduate credit is also awarded. Students need to consult with a potential graduate advisor to ensure this graduate credit can be applied to a program of study for the M.S. degree. Application to the combined degree program may be made as early as the end of the junior year (i.e., after completion of 90 or more hours of graded undergraduate courses). This option is only available for students pursuing a thesis-based Master of Science degree in Agriculture with a concentration in Agronomy, Horticulture, or Weed Science.

Departmental Admission Criteria

M.S. in Plant and Soil Sciences and Ph.D. in Plant and Soil Sciences with concentrations in Agronomy, Horticulture, or Weed Science:

- GPA —
  For Master of Science: 2.75.
  For Doctor of Philosophy: 3.0 on graduate work
- TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Systems) score - TOEFL score of 500 PBT (173 CBT; 61 iBT) or IELTS score of 5.5.
- GRE —all graduate programs require submission of GRE scores.
- Non-thesis M.S. — a non-thesis M.S does not qualify toward admission to a Ph.D. program in the Department of Plant and Soil Sciences at Mississippi State University.

Requirements for entrance into the combined B.S./M.S. program in Agronomy, Horticulture, or Weed Science are:

1. a GPA of 3.50 or higher for all undergraduate work;
2. submission of a standard application for graduate studies in the Department of Plant and Soil Sciences along with application fee;
3. three letters of recommendation from individuals familiar with the applicant's academic performance;
4. submission of scores from the Graduate Record Examination (GRE) General Test prior to admission to the graduate program, and
5. a statement of professional interests and goals from the applicant, including specification of one or more potential major professors.

For students enrolled in a combined B.S./M.S. program, the MSU Graduate Council has established these guidelines in cooperation with the Registrar's Office:

Once the student is accepted into the combined program, the student and the advisor may select up to 9 hours that will satisfy both undergraduate and graduate requirements. These courses may be split-level (i.e., 4000-6000 level) or 8000 level classes, and the student should take the courses for graduate credit (i.e., 6000-level or higher). To do so, he/she must submit a completed form to the Office of the Graduate School requesting such permission: http://www.grad.msstate.edu/forms/pdf_forms/undergraduate_request_to_enroll_in_graduate_course.pdf. The OGS will notify the student by MSU email when the request is approved. The combination of undergraduate and graduate credit hours may not exceed 16 hours within a semester. After successfully completing the graduate-level classes, the student and undergraduate advisor will submit a request to the Registrar's Office to grant credit for the course also at the undergraduate level with the same grade awarded as received for the graduate course. In the case of a split-level class, the transcript will show credit for both the 4000- and 6000-level on the transcript. In the case of an 8000-level class, a special topics undergraduate course of the same title will be entered on the transcript to allow dual credit.

Students are permitted to opt out of the combined program at any time, at which point they could complete only the undergraduate portion of the program. No additional dual counting of courses would occur after the student leaves the combined program.

Students will receive the bachelor's degree once the requirements for that degree are met. Students will be required to complete all of the requirements for both the bachelor's and master's degrees in order to receive both degrees, and those requirements will be identical to the requirements for students enrolled in the traditional B.S. and M.S. programs. Students will be classified as undergraduates until they fulfill at the requirements for the undergraduate degree. At that time they will be classified as graduate students and will be subject to the guidelines pertaining to the M.S. degree. Students admitted to this program should read and understand the guidelines in the Department of Plant and Soil Sciences Graduate Student Handbook before registering for any courses for graduate credit.

Provisional Admission— A student who has not met the requirements stipulated by the University for admission to graduate study (GPA of 2.75) may be granted admission as a degree-seeking graduate student with provisional status. The student will be eligible for advancement to regular status after attaining a 3.00 GPA on the first 9 hours of graduate-level courses taken at Mississippi State University (courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement). If a GPA of 3.00 is not attained, the provisional student may be dismissed from the graduate program.

Leveling Courses- The Department of Plant and Soil Science recognizes that many students who hold bachelor degrees from other educational areas may wish to study towards an advance degree within the department. These students may come from areas with different requirements than those normally associated with Agronomy, Horticulture, or Weed Science. To increase the possibility of success in attaining the advanced degree, the department requires all graduate students to have a fundamental understanding of soil and plant science. To this end, all graduate students must have had at least one course in soil science equivalent to Soils (PSS 3303), a plant science course covering basic plant physiology college mathematics, college chemistry, and college level biology. Graduate students who don't possess these courses upon acceptance will be required to complete these courses during the first or second semester of their attendance at Mississippi State University.

General Department Completion Requirements

M.S. — A thesis and an oral thesis defense are required. The graduate committee must approve the thesis topic, research proposal, program of study and final thesis.
M.S. Non-thesis. – A research paper approved by the student's graduate committee and an oral comprehensive exam are required.
Ph.D. — The dissertation is required of all candidates for the doctorate degree. Original research, a written and oral preliminary exam and an oral dissertation defense and exam are required. At least one semester of teaching experience is strongly encouraged. The graduate committee must approve the dissertation topic, research proposal, program of study, and final dissertation.

Academic Performance

Students in the M.S. and Ph.D. degree programs must maintain a 3.00 GPA after admission to the program. No grade below C will be accepted for graduate credit. More than two grades (6 total hours) of C or below constitute grounds for dismissal. Note: C grades for a course that is retaken and in which the student earns a grade of B or higher will not be included in the 6 total hours. However, the original grade is included as part of the calculation of the GPA. At any time, the student will lose any departmental assistantship should his/her cumulative GPA drop below a 3.0. Students with alternative sources of funding (scholarships, fellowships, etc.) must follow the rules and regulations of the funding source.

2. CURRICULUM OUTLINE

Proposed Curriculum

General Departmental Requirements

Concentrations may have additional requirements and/or restrictions.

Plant and Soil Sciences Master of Science - Thesis

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science – Non-Thesis

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree. Concentrations may have greater requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Departmental Graduate Degree Concentration Requirements

Plant and Soil Sciences Master of Science Agronomy Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science Agronomy Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Agronomy Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Plant and Soil Sciences Master of Science Horticulture Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.

[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours.

Plant and Soil Sciences Master of Science Horticulture Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Horticulture Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

BCH 6013 Principles of Biochemistry	3
PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8214 Design and Analysis of Experiments (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	15
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	44

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours, two graduate level statistics courses beyond the B.S. degree are required for the PhD in Horticulture. .

[4]The minimum coursework required for a PhD in Horticulture in Plant and Soil Sciences is 24 hours beyond the Master's degree requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

Horticulture (Floral Management) Graduate Minor

PSS 6013 Principles of Floral Design	3
PSS 6023 Floral Management	3
PSS 6033 Case Studies in Floral Management	3
PSS 6043 International Horticulture	3
Total Hours	12

The graduate minor is available for graduate students seeking training in this field to complement their graduate degree. Students seeking the minor are required to complete the 12-hour program. The student's graduate committee must include a minor committee member from the Department of Plant and Soil Sciences.

Plant and Soil Sciences Master of Science Weed Science Concentration – Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 8811 Seminar[1]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[2]	4
Additional 8000-level coursework[3]	7
Research/thesis	6
Total Minimum Hours Required	30

A thesis defense is required.

[1]A graduate level statistics course is required as part of the credit hours.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]The total 8000-level coursework must equal a minimum of 12 hours. Up to 9 hours of PSS 8701-8771 Current Topics in Weed Science may be included to meet these requirements.

Plant and Soil Sciences Master of Science Weed Science Concentration – Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences[1]	3
PSS 8811 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional 8000-level coursework[4]	10
Total Minimum Hours Required	30

An oral comprehensive exam is required.

[1]The student must develop a research paper approved by the student's graduate committee.
[2]An exit seminar describing the thesis research is required as part of the credit hours.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The total 8000-level coursework must equal a minimum of 15 hours.

Plant and Soil Sciences Doctor of Philosophy Weed Science Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8821 Seminar[1]	1
PSS 8831 Seminar[2]	1
ST 8114 Statistical Methods (or other graduate level statistics course)[3]	4
Additional Graduate-level coursework[4]	14
PSS 9000 Research/Dissertation	20
Total Minimum Hours Required[5]	40

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary exam will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

[1]The first seminar should be done in within the first year of the student's program and should present the research proposal and include a review of relevant literature.
[2]An exit seminar will describe the results of the student's dissertation research.
[3]A graduate level statistics course is required as part of the credit hours.
[4]The minimum coursework required for a PhD in Plant and Soil Sciences is 20 hours beyond the Master's degree requirements. Up to 9 hours of PSS 8701-8771 Current Topics in Weed Science may be included to meet these requirements.
[5]Mississippi State University requires all students earn at least 53 hours graduate credit beyond the bachelor's level to include a minimum of 20 hours dissertation credits.

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Expected Learning Outcomes

1. Students will be able to demonstrate a broad based knowledge in their respective discipline.

2. Students will demonstrate a broad based knowledge related to identification and management of issues in Mississippi and how these relate to issues regionally and globally within their respective discipline.

3. Students will know and understand current trends and important issues within their respective discipline.

4. Students will have a working knowledge of research methodology, experimental design, data management and interpretation.

5. Students will be able to communicate effectively with clientele and peers in their disciplines.

Assessment Methods.

Students in the Plant and Soil Sciences Doctor of Philosophy degree program will be required to complete the following before earning their degree.

Ph.D. — A qualifying examination may be administered at the beginning of the student's program to determine deficiencies in prior training. The student must successfully complete a program of study as approved by the major advisor and graduate committee. A minimum number of 20 hours coursework (including a graduate level statistics course, and two seminars (PSS 8821-8831)) and a minimum of 20 hours of research/dissertation (PSS 9000) are required. The first seminar, which should be done in within the first year of the student's program, will present the research proposal and include a review of relevant literature, and the second, or exit seminar, will describe the results of the student's dissertation research. The student must pass a written and oral preliminary exam administered by the graduate committee after completion or within 6 hours of completing coursework to be considered a doctoral candidate. Original research and a dissertation are required of all candidates for the doctorate. An oral dissertation defense and exam are required. At least one semester of teaching experience is strongly encouraged. The graduate committee must approve the dissertation topic, research proposal, program of study, and final dissertation.

4. SUPPORT

See attached letter.

There will be no additional personnel or material support needed to support this degree program.

5. PROPOSED 4-LETTER ABBREVIATION

PSSD (Plant and Soil Sciences Doctorate of Philosophy)

6. EFFECTIVE DATE

Spring 2016

MISSISSIPPI STATE
UNIVERSITY

Department of Plant and Soil Sciences

September 15, 2014

CALS Courses & Curriculum Committee
College of Agriculture and Life Sciences
Box 9760
Mississippi State, MS 39762

CALS CCC:

The PSS CCC as a committee discussed the proposed new Doctorate (Ph.D.) degree in Plant and Soil Sciences in the department of Plant and Soil Sciences. After considerable discussion, the committee in a unanimous vote supports the proposed graduate Doctorate degree in Plant and Soil Sciences. The committee determined this is a needed addition to the PSS curricular program that will help build our programs and offer PSS graduates new career options. This program does not represent a duplication of effort from other programs offered in the department or at Mississippi State University.

Sincerely,

Richard L. Harkess, Chair
Plant and Soil Sciences Courses & Curriculum Committee

c: PSS CCCommittee
Michael Cox
Jim DelPrince
William Kingery
David Lang
Daniel Reynolds
Barry Stewart

c: Mike Phillips, Dept. Head, PSS

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College: College of Business Department: Management & Information Systems

Contact Person: Dr. Rodney Pearson Mail Stop: 9581 E-mail: rodney.pearson@msstate.edu

Nature of Change: Modification Date Initiated: September 2014 Effective Date: Summer 2015

Degree to be offered at: Starkville and Meridian

Current Degree Program Name: Bachelor of Business Administration

Major: Business Information Systems Concentration:

New Degree Program Name: Bachelor of Business Administration

Major: Business Information Systems Concentration:

Summary of Proposed Changes:
- Update and rearrange sequence of four computer programming classes.
- Replace BIS 1733 (Visual Basic) and BIS 1753 (COBOL) with two new classes: BIS 1523 (Web Development I) and BIS 2523 (Web Development II).
- Modify the current BIS 3523 (Advanced Languages I, which is one semester of web programming) to cover the Java programming language.
- Modify the current BIS 4523 (Advanced Languages II, in which the language covered varies) to cover business programming with COBOL. Change name to "Business Programming with COBOL".

Approved:	*Date:*
Department Head	NOV. 3, 2014
Chair, College or School Curriculum Committee	11/3/2014
Dean of College or School	11/5/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

MISSISSIPPI STATE UNIVERSITY

Department of Management and Information Systems
College of Business

To: University Committee on Courses and Curricula

From: BIS Faculty, Management & Information Systems Department
Starkville Campus

Date: November 2, 2014

The BIS faculty have reviewed the proposed degree modifications for the Bachelor of Business Administration in Business Information Systems. The proposed changes are relevant in today's computing world and would provide students with knowledge and experience in current, state-of-the-art tools.

We support this proposal, and appreciate your consideration of it. If you have any questions, or need any additional information, please contact Dr. Rodney Pearson at RPearson@business.msstate.edu.

Thank you for your time in considering this request.

Dr. James J. Chrisman, Department Head

Dr. Robert Otondo

Dr. Kent Marett

Dr. Rodney Pearson

Dr. Merrill Warkentin

Dr. Robert E. Crossler

Dr. Gary Templeton

Mr. Steve Canfield

302 McCool Hall • Box 9581 • Mississippi State, MS 39762 • (662) 325-3928 • (662) 325-8651 Fax • http://business.msstate.edu

PROPOSAL TO MODIFY

Bachelor of Business Administration in Business Information Systems

This request includes four modifications to the BIS curriculum:

1. Replace BIS 1733 as a required class with BIS 1523.
2. Replace BIS 1753 as a required class with BIS 2523.
3. Modify the content of BIS 3523.
4. Modify the content and name of BIS 4523.

1. Catalog Description

There are no significant changes in the focus of the curriculum, so the catalog description has not been changed.

2. Curriculum Outline

CURRENT Degree Description	PROPOSED Degree Description
Degree: Bachelor of Business Administration Major: Business Information Systems	Degree: Bachelor of Business Administration Major: Business Information Systems
Business, industrial, governmental, and military establishments are constantly seeking persons with the necessary aptitude, professional education, and experience for careers in the fast-growing field of computer information systems. Through the facilities of the academic departments and the computing center, students at Mississippi State University have a unique opportunity to acquire both professional education and experience in business and management information systems. The purpose of the Business Information Systems major is to prepare students to solve business problems where the solution normally involves the use of a computer. Thus, the student must have a strong foundation in computer concepts, systems analysis and design, programming and quantitative skills. Since the student will be expected to solve business related problems, he/she must have a broad background and understanding of the business environment including such topics as accounting, economics, law, management, production, marketing, finance, and communications. A student chapter of the BIS club is active and provides students with the opportunity to keep abreast of current developments in the field of management information systems through	Business, industrial, governmental, and military establishments are constantly seeking persons with the necessary aptitude, professional education, and experience for careers in the fast-growing field of computer information systems. Through the facilities of the academic departments and the computing center, students at Mississippi State University have a unique opportunity to acquire both professional education and experience in business and management information systems. The purpose of the Business Information Systems major is to prepare students to solve business problems where the solution normally involves the use of a computer. Thus, the student must have a strong foundation in computer concepts, systems analysis and design, programming and quantitative skills. Since the student will be expected to solve business related problems, he/she must have a broad background and understanding of the business environment including such topics as accounting, economics, law, management, production, marketing, finance, and communications. A student chapter of the BIS club is active and provides students with the opportunity to keep abreast of current developments in the field of management information systems through

professional speakers, social activities, and field trips.		professional speakers, social activities, and field trips.	
CURRENT CURRICULUM OUTLINE	Required Hours	PROPOSED CURRICULUM OUTLINE	Required Hours
English Composition EN 1103 English Comp I *or* EN 1163 Accelerated Comp I *or* EN 1183 Honors Comp I EN 1113 English Comp II *or* EN 1173 Accelerated Comp II *or* EN 1193 Honors Comp II	6	English Composition EN 1103 English Comp I *or* EN 1163 Accelerated Comp I *or* EN 1183 Honors Comp I EN 1113 English Comp II *or* EN 1173 Accelerated Comp II *or* EN 1193 Honors Comp II	6
Public Speaking CO 1003 Fundamentals of Public Speaking *or* CO 1093 Honors Oral Communication	3	Public Speaking CO 1003 Fundamentals of Public Speaking *or* CO 1093 Honors Oral Communication	3
Mathematics MA 1313 College Algebra MA 1613 Calculus for Business I BQA 2113 Business Stat Methods I	9	Mathematics MA 1313 College Algebra MA 1613 Calculus for Business I BQA 2113 Business Stat Methods I	9
Science 6 hours Science with Lab elective from University Core	6	Science 6 hours Science with Lab elective from University Core	6
Humanities 6 hours elective from University Core	6	Humanities 6 hours elective from University Core	6
Fine Arts 3 hours elective from University Core	3	Fine Arts 3 hours elective from University Core	3
Social/Behavioral Sciences PS 1113 American Government 3 hours elective from University Core	6	Social/Behavioral Sciences PS 1113 American Government 3 hours elective from University Core	6
COLLEGE CORE COURSES ACC 2013 Principles of Financial Accounting ACC 2023 Principles of Managerial Accounting BIS 1012 Introduction to Business Information Systems BIS 3233 Management Information Systems BL 2413 Legal Environment of the Business BQA 3123 Advanced Business Statistics EC 2113 Principles of Macroeconomics EC 2123 Principles of Microeconomics FIN 3113 Financial Systems FIN 3123 Financial Management MGT 3114 Principles of Management and Production MGT 3213 Organizational Communication I MKT 3013 Principles of Marketing	45	COLLEGE CORE COURSES ACC 2013 Principles of Financial Accounting ACC 2023 Principles of Managerial Accounting BIS 1012 Introduction to Business Information Systems BIS 3233 Management Information Systems BL 2413 Legal Environment of the Business BQA 3123 Advanced Business Statistics EC 2113 Principles of Macroeconomics EC 2123 Principles of Microeconomics FIN 3113 Financial Systems FIN 3123 Financial Management MGT 3114 Principles of Management and Production MGT 3213 Organizational Communication I MKT 3013 Principles of Marketing	45

BUS 4853 Business Policy 3 hours Int'l elective from College list		BUS 4853 Business Policy 3 hours Int'l elective from College list	
MAJOR CORE COURSES Required Major Classes (18 hours) *BIS 1733 Visual Basic Applications*[1] *BIS 1753 Intro to Business COBOL*[1] BIS 3523 Advanced Languages I BIS 3753 Business Database Systems BIS 4753 Structured Systems Analysis BIS 4763 BIS Senior Seminar Elective Major Classes (6 hours) BIS 4113 BIS Security Management BIS 4513 Microcomputers and Networks BIS 4523 Advanced Languages II[2] BIS 4533 Decision Support Systems Electives (16 hours) 3 hours of Computer Science electives 9 hours of computer-related electives 4 hours of free electives	40	MAJOR CORE COURSES Required Major Classes (18 hours) **BIS 1523 Web Development I** **BIS 2523 Web Development II** BIS 3523 Advanced Languages I BIS 3753 Business Database Systems BIS 4753 Structured Systems Analysis BIS 4763 BIS Senior Seminar Elective Major Classes (6 hours) BIS 4113 BIS Security Management BIS 4513 Microcomputers and Networks BIS 4523 Bus Programming w COBOL BIS 4533 Decision Support Systems Electives (16 hours) 3 hours of Computer Science electives 9 hours of computer-related electives 4 hours of free electives	40
Total Hours	124	Total Hours	124
[1] BIS 1733 and BIS 1753 are no longer required major courses, but will not be deleted from the catalog at this time. [2] BIS 4523 is modified from "Advanced Languages II" to "Business Programming with COBOL."			

3. Justification

This modification replaces the current two intro programming classes with two new classes which are being proposed to replace them.

Learning outcomes:

The mission of the Business Information Systems program is to prepare students to become information systems professionals and managers who can successfully develop, acquire, and integrate information technology across levels and functions in a firm in the continually changing global business environment. The learning (knowledge) objectives of the program are organized into five areas: technical, communication, business foundation, professionalism, and integration of information systems in business. After completing the degree, students will be able to:

1. Demonstrate competency in the following technical areas: programming skills (e.g., object-oriented and web-based skills); data communication skills; database skills; data, information, and knowledge management skills; systems analysis skills; systems design skills; discussing the technical foundation of different types of information systems; using application development tools; selecting, installing, configuring, and using hardware; and assessing emerging technologies.

2. Demonstrate competency in the following areas: oral presentation skills, writing skills, interpersonal and collaborative skills, and the ability to listen and understand technical and non-technical people.

3. Demonstrate competency in discussing the functional areas of a firm, the role of different management levels in a firm, the role of a firm's external environment in its operations, the role of a firm's internal environment in its operations, and the information needs of different functional areas and levels of a firm.

4. Discuss standards of professional conduct in the information systems profession, including staying current in information systems technology and trends, participating in professional organizations, pursuing appropriate professional certifications, continuing development of information systems vocabulary, and maintaining high ethical standards.

5. Demonstrate the ability to analyze a business situation and design an IS solution that integrates the reality of IT capabilities and limitations with the needs and goals of the business by understanding the relationship among functional areas and information needs. The demonstration should include, but not be limited to assessing general business needs and areas for applications of IS technology, assessing specific business systems, incorporating the human element in IS applications, discussing the changing global business environment and the impact of the changes on business needs and technology applications, demonstrating problem-solving skills, describing the role of the different types of information systems in business, and describing the management of information systems.

The changes in this degree modification proposal will help improve the BIS BBA Degree Program in several ways.

1. Will this program change meet local, state, regional, and national educational and cultural needs?

   We believe the proposed changes will help meet several educational and cultural needs. First, moving the popular Web development content to 1000-level classes should create more interest in the BIS program in lower-division students. In turn, this move should help MSU meet local, state, regional, and national needs for more STEM students and graduates. Second, the proposed changes should help meet the need for graduates with a more rigorous background in COBOL and/or with training in object-oriented programming.

2. Will this program change result in duplication in the System?

   No. We have contacted the Computer Science, Mechanical Engineering, and Instructional Systems & Workforce Development departments. They did not indicate that our proposed changes would create duplications.

3. Will this program change alter or advance student diversity within the discipline?

   We do not foresee that the proposed changes will increase nor decrease student diversity in the BIS discipline.

4. Will this program change result in an increase in the potential placement of graduates in MS, the Southeast, and the U.S.?

   We believe that that the proposed changes will increase the potential placement of BIS graduates because such students will receive training in the technical skills demanded by industry (e.g., in object-oriented programming) or at a deeper, more rigorous content level (e.g., a 4000- level vs. 1000-level course in COBOL).

5. Will this program change result in an increase in the potential salaries of graduates in MS, the Southeast, and the U.S."

We believe the proposed changes will help increase potential salaries for BIS graduates given the increased need for job applicants with greater technical skills. Moving COBOL to an upper-division class (i.e., BIS 4523/6523) will allow BIS faculty to teach a more rigorous course, which should in turn improve the potential salaries and employability of those students seeking a programming career. Similar gains are foreseen by changing the BIS 3523 to an object-oriented teaching medium.

4. Support

E-mails were sent in early September to Drs. Donna Reese of Computer Science, Pedro Mago of Mechanical Engineering, Connie Forde of IS&WD, and Seungjae Shin of Meridian. Drs. Reese, Mago, and Forde responded via e-mail (which have since been lost) that they had no objections to the BIS BBA and associated proposals. Dr. Shin did not respond.

5. Proposed 4-Letter Abbreviation

No change

6. Effective Date

Summer 2015

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College: Business **Department:** Dean's Office

Contact Person: Kevin Rogers **Mail Stop:** 9588 **E-mail:** kevin.rogers@msstate.edu

Nature of Change: Add **Date Initiated:** 09/2014 **Effective Date:** 01/2014

Degree to be offered at: Campus 1

Current Degree Program Name: n/a

Major: **Concentration:**

New Degree Program Name: Minor in Entrepreneurship

Major: n/a **Concentration:** n/a

Summary of Proposed Changes:

Create a Minor in Entrepreneurship comprised of 16 hours of courses:

- MGT 3323 Entrepreneurship
- MGT 3333 Field Studies in Entrepreneurship
- BL 4243 Legal Aspects of Entrepreneurship
- FIN 4323 Entrepreneurial Finance
- MKT 4423 Strategic Brand Management
- GE 3011 Engineering Entrepreneurship Seminar

Approved:	*Date:*
Ken Rogers Department Head	10/17/14
Robert Orlando Chair, College or School Curriculum Committee	11/5/2014
Ken Rogers Dean of College or School	11/5/14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

☐ IHL Action Required

☐ SACS Letter Sent

MISSISSIPPI STATE UNIVERSITY

OFFICE OF THE DEAN
COLLEGE OF BUSINESS

Date: October 17, 2014

To: UCCC

From: College of Business Curriculum Committee

Subject: Letter of Support for the Minor in Entrepreneurship

Representing the College of Business faculty, we support the creation of the minor in entrepreneurship and the related new courses FIN 4323 and MKT 4423.

Faculty:	Support	Do not support
Randall Campbell, Associate Professor of Economics Finance & Economics	x	
Robert Moore, Professor of Marketing Marketing, Quantitative Analysis & Business Law	x	
Bob Otondo, Associate Professor of Information Systems Management & Information Systems	x	
John Rigsby, Associate Professor of Accounting Accountancy	X	
Carlton Young, Associate Professor of Health Care Administration Meridian		
Vergie Bash, Senior Academic Coordinator Business	X	
Krystle Dixon, Academic Coordinator Accounting	X	

New Minor Proposal
Minor in Entrepreneurship

1. CATALOG DESCRIPTION

See below in curriculum outline table

2. CURRICULUM OUTLINE

PROPOSED NEW DEGREE DESCRIPTION	
Minor: Entrepreneurship In partnership with the MSU Entrepreneurship Center, the College of Business offers a minor in Entrepreneurship to help MSU students prepare for launching and growing new business ventures. This minor offers interdisciplinary coursework in management, marketing/branding, entrepreneurial finance, and the legal aspects of entrepreneurship. Each course in the minor goes beyond traditional business courses by focusing on entrepreneurial applications. The entrepreneurship minor is available to any MSU student, regardless of major. The Minor in Entrepreneurship is designed to complement the Engineering Entrepreneurship Certificate program by allowing engineering majors to benefit from more advanced coursework in entrepreneurship. Upon completion of the Engineering Entrepreneurship Certificate, a student will have the prerequisites for the Entrepreneurship minor. The minor is comprised of 16 hours listed below: • MGT 3323 Entrepreneurship (Prerequisite: EC 2123) • MGT 3333 Field Studies in Entrepreneurship (Prerequisite: MGT 3323) • BL 4243 Legal Aspects of Entrepreneurship (Prerequisites: BL 2413, MGT 3323, or consent of instructor) • FIN 4323 Entrepreneurial Finance (Prerequisite: Grade of C or better in FIN 3123 or IE 3913) • MKT 4423 Strategic Brand Management (Prerequisite: MKT 3013) • GE 3011 Engineering Entrepreneurship Seminar Students interested in the Entrepreneurship Minor should contact the COB Academic Advising Center in 106 McCool Hall.	

PROPOSED CURRICULUM OUTLINE	Required Hours
MGT 3323 Entrepreneurship	3
MGT 3333 Field Studies in Entrepreneurship	3
BL 4243 Legal Aspects of Entrepreneurship	3
FIN 4323 Entrepreneurial Finance	3
MKT 4423 Strategic Brand Management	3
GE 3011 Engineering Entrepreneurship Seminar	1
Total Hours	16

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Students completing the Entrepreneurship Minor will be able to:

- Develop a business plan for a new business venture
- Understand and interpret the financial statements required to obtain funding from outside investors
- Understand legal issues pertaining to new business ventures
- Develop a brand strategy plan for a new business venture

Learning outcomes will be assessed by direct measures embedded in course assignments. Students in the minor will also generally compete in entrepreneurship competitions. These competitions are judged by entrepreneurs and investors. Their feedback will supplement the direct measures in overall program assessment.

4. SUPPORT
See attached.

5. PROPOSED 4-LETTER ABBREVIATION
ENTP

6. PROPOSED SEMESTER EFFECTIVE
Spring 2015

APPROVAL FORM FOR

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College Education **epartment:** Curric, Instruction, and Special Education

Contact Person: Devon Brenner **Mail Stop:** 9705 **E-mail:** dgb19@msstate.edu

Nature of Change: Modification

Distance Learning (Campus 5)

Degree Program Name: Master of Art

Select One

ummary of Proposed Changes:
Create the special education concentration for the Master of Arts in Teaching

Department Head	10/8/2014
Chair, College or School Curriculum Committee	11-6-14
Dean of College or School	11-6-14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

☐ SACS Letter Sent

DEGREE PROGRAMS

MISSISSIPPI STATE UNIVERSITY

NOTE: This form is a cover sheet that must accompany the degree program change proposal. The actual proposal should be prepared in accordance with format requirements provided in the *Guide and Format for Curriculum Proposals* published by the UCCC. Both cover sheet and proposal should be submitted, along with all required copies, to UCCC, Garner Hall, Room 279, Mail Stop 9702.

College or School: Education **Department:** Curriculum, Instruction, and Spec

Contact Person: Devon Brenner **Phone:** 5-7119 **E-mail:** dgb19@msstate.edu

Nature of Change: Distance Approval **Date Initiated:** **Effective Date:**

Current Degree Program Name: Master of Arts in Teaching

Major: **Concentration:** Special Education

Summary of Proposed Changes:

Establish the MAT-X (Master of Arts in Teaching-Special Education) as a new concentration in the online Master of Arts in Teaching degree program in the CISE department.

Approved: Devon R Department Head	***Date:*** 10/8/2014
Rebecca Robichaux-Davis Chair, College or School Curriculum Committee	11-6-14
Teresa Kellerose Dean of College or School	11-11-14
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

Degree Proposal

BACKGROUND INFORMATION/JUSTIFICATION FOR THE MASTER OF ARTS IN TEACHING SPECIAL EDUCATION (MAT-X)

The Master of Arts in Special Education (MAT-X) will create a third concentration in the existing Master of Arts (MAT) degree program in Curriculum, Instruction, and Special Education. The Mississippi State University Department of Curriculum, Instruction, and Special Education (CISE) currently offers the Master of Arts in Teaching degree (MAT) with concentrations in Middle Level Education and Secondary Education. The MAT-M leads to a Master's degree and to licensure in grades 4-6. The MAT-Secondary degree leads to a Master's degree and to licensure in grades 7-12. The CISE department has offered the Teach Mississippi Institute (TMI) for the past several years for alternative licensure to teach special education. The TMI program follows the guidelines of the Mississippi Department of Education for alternate route licensure but does not require admission to a degree program and does not lead to an advanced degree.

The special education program area in CISE seeks to establish the MAT-X—the Master of Arts in Teaching with a concentration in special education. The MAT-X will continue to help individuals who already have a Bachelor's degree in another field to obtain licensure for special education teaching for grades K-12. The MAT-X will also provide more in-depth training and preparation for the special education classroom and will provide mentoring through the first year of teaching for newly licensed special education teachers.

The MAT-X will become the third concentration in the Master of Arts Teaching program in the CISE department.

1. CATALOG DESCRIPTION

   Degree: Master of Arts in Teaching
   Concentration: Special Education

   The masters of arts in teaching special education (MATX) is an alternate licensure program of study that consists of 33 semester hours of graduate level coursework. It is designed for a career as a special education teacher. In addition to the criteria for admission to a Master of Science degree program in CISE (with the exception of a teaching license), MATX candidates must pass the Praxis CORE and Praxis II Specialty Area Test required for special education licensure by the Mississippi Department of Education, possess either 21 hours in a single content area or pass the desired Praxis II Specialty Area test for a specific content area, and pass a certified background check.

   Required courses include EDX 6173 Introduction to Contingency Management, EDX 8173 Special Education in the Regular Classroom, EDX 6183 Advanced Planning for Special Education, EDX 6813 Introduction to Assessment in Special Education, EDX 8013 Introduction to Teaching Individuals with Intellectual and Developmental Disabilities, EDX 8023 Intro to Teaching Students with Learning Disabilities, EDX 8053

Intro to Teaching Individuals with Emotional/ Behavioral Disorders, EDX 8143 Internship I, EDX 8243 Internship II, an approved math pedagogy elective, and an approved reading pedagogy elective. MAT-X students must also pass a certified background check prior to beginning field experiences.

2. CURRICULUM OUTLINE

(bold indicates new courses accompanying this proposal)

Course title	Hours
EDX 6173 Introduction to Contingency Management	3
EDX 8173 Special Education in the Regular Classroom	3
EDX 6183 Advanced Planning for Special Education	3
EDX 6813 Introduction to Assessment in Special Education	3
EDX 8013 Introduction to Teaching Students with Intellectual and Developmental Disabilities	3
EDX 8023 Introduction to Teaching Students with Learning Disabilities	3
EDX 8053 Intro to Teaching Individuals with Emotional/ Behavioral Disorders	3
EDX 8143 Internship 1	3
EDX 8243 Internship 2	3
Math Pedagogy Elective (EDS 6633 or EDE 8163)	3
Reading Pedagogy Elective (RDG 8113, RDG 8123, RDG 8133 or RDG 8653)	3
Total Hours	33

Like other MAT concentrations, the MAT-X will be offered completely online, with no requirements to attend courses or experiences on the MSU campus. Students will have an opportunity to participate in summer orientations and workshops on the MSU campus, but these will not be mandatory for completion of the degree program.

The MAT-X will require:

Initial Licensure courses:
Completion of the three initial courses, EDX 8173 Special Education in the Regular Classroom, EDX 6193 Advanced Planning for Special Education, and EDX 6813 Introduction to Assessment in Special Education. These three courses are already required for the Teaching Mississippi Institute. Successful completion of these courses will allow a student to be recommended for the three-year non-renewable special education teaching license. These courses are already approved for distance education and are required by the Mississippi Department of Education for initial licensure.

Internship Courses:
Following initial licensure, students who obtain a full-time teaching position will enroll in two semesters of internship courses, EDX 8233 and EDX 8243. These two three-credit

internship courses will allow for observation, mentoring, and feedback during the first year of teaching. During the first internship semester, students will also enroll in EDX 6173 Contingency Management, which provides an additional support for managing the special education classroom and supporting student behavior.

> EDX 6173. Introduction to Contingency Management. (3) Three hours lecture. Introduction to the principles and procedures of contingency management and applied behavioral analysis for teaching individuals with disabilities.

Special Education Courses and Content Pedagogy

Students will complete three courses in special education. These courses will provide students with knowledge about three areas of disability: learning disabilities, emotional and behavioral disabilities, and intellectual disabilities. These three courses will help students understand the characteristics of disabilities and ways to plan and differentiate instruction for students with special needs. They will help the individual become a more effective special education teacher. The final two courses will consist of introductory pedagogy courses in reading and mathematics. Students will select one reading and one mathematics methods/pedagogy course. These RDG, EDE, and EDS courses already exist as online courses required in the MAT-M and MAT-S programs and will provide special educators with basics for teaching literacy and mathematics, the two areas of content they are most likely to teach in the special education classroom.

> EDX 8013 Introduction to Teaching Individuals with Intellectual and Developmental Disabilities. (3) Three hours lecture. Characteristics of students with intellectual and developmental disabilities. Theories, principles and methods for teaching individuals with intellectual and developmental disabilities. (new course)
>
> EDX 8023 Introduction to Teaching Individuals with Learning Disabilities. (3). Three hours lecture. Characteristics of students with learning disabilities. Theories, principles and methods for teaching individuals with learning disabilities.
>
> EDX 8053 Introduction to Teaching Individuals with Emotional/Behavioral Disorders. (3) Three hours lecture. Characteristics of students with emotional/behavioral disorders. Theories, principles and methods for teaching individuals with emotional/behavioral disorders.

Completion of the degree program will allow the student to be recommended for permanent licensure in special education.

3. STUDENT LEARNING OUTCOMES AND ASSESSMENTS

The target audience for the MAT-X (special education concentration of the Master of Arts in Teaching) will be individuals who have a bachelor's degree and who are interested in becoming special education teachers. The Teach Mississippi Institute follows the minimal guidelines for special education teacher licensure of the Mississippi Department of Education. Approximately 50 individuals earn special education licensure each year through the TMI program. The target audience for the MAT-X program will be those individuals. We believe that creating the Master's program for these students will encourage them to complete the Master's degree and to engage in the deeper learning afforded by the additional courses.

Learning outcomes for the MAT-X will be the standards established by the Council for Exceptional Children (CEC):

1. Beginning special education professionals understand how exceptionalities may interact with development and learning and use this knowledge to provide meaningful and challenging learning experiences for individuals with exceptionalities.
2. Beginning special education professionals create safe, inclusive, culturally responsive learning environments so that individuals with exceptionalities become active and effective learners and develop emotional well-being, positive social interactions, and self-determination.
3. Beginning special education professionals use knowledge of general and specialized curricula to individualize learning for individuals with exceptionalities.
4. Beginning special education professionals use multiple methods of assessment and data-sources in making educational decisions.
5. Beginning special education professionals select, adapt, and use a repertoire of evidence-based instructional strategies6 to advance learning of individuals with exceptionalities.
6. Beginning special education professionals use foundational knowledge of the field and the their professional Ethical Principles and Practice Standards to inform special education practice, to engage in lifelong learning, and to advance the profession.
7. Beginning special education professionals collaborate with families, other educators, related service providers, individuals with exceptionalities, and personnel from community agencies in culturally responsive ways to address the needs of individuals with exceptionalities across a range of learning experiences.

These standards/learning outcomes will be assessed in multiple ways. First, the degree program will participate in NCATE/CAEP accreditation. The program will have to prepare a folio of documents and artifacts to demonstrate graduate students' mastery of the seven CEC standards. The folio will include multiple key assessments drawn from courses including assignments, lesson and unit plans, and reflections. Accreditation assessments will also include observations by university supervisors of teachers engaging instruction in the classroom. Also, students' accomplishments toward these learning outcomes will be assessed by the comprehensive exam. Entry into the MAT-X program requires, by state law,

that candidates pass the Praxis II content area licensure exam. The comprehensive examination for the MAT-X (and for all MAT programs in CISE) is the Praxis II Principles of Learning and Teaching exam. The PLT exam, as it is called, assesses candidates' knowledge of principles of assessment, teaching practice, classroom management, interaction with families, and other items. It is aligned with the CEC standards.

JUSTIFICATION FOR DISTANCE LEARNING OFFERING

The MAT-X degree will be offered online through the Center for Distance Education, as are the MAT-Middle Level and MAT-Secondary degrees already offered. The special education concentration of the MAT degree will replace the existing online Teach Mississippi Institute. The TMI program requires 15 credits, all of which are offered via distance. The MAT-X will require 33 credits, including a year-long internship in schools (replacing the one-semester internship in TMI) and additional coursework in reading, mathematics, and in teaching students with learning disabilities, intellectual and developmental disorders, and emotional and behavioral disorders. This extra coursework will strengthen the competency of graduating teachers.

ACADEMIC MISCONDUCT

Individual course proposals describe methods for deterring academic misconduct. Many courses will include assignments drawn from field experiences and/or that are personalized (e.g., writing case studies, assessing students, reflecting on teaching, creating individualized lesson plans, etc.). These individualized assignments will necessarily be difficult to plagiarize. Exams and quizzes will be time sensitive and delivered in random order, and all exams will be new each year.

TARGET AUDIENCE

The tartget audience is individuals who already have a bachelor's degrees and would like to become special education teachers. In particular, the MAT-X is intended to serve rural schools and communities where there are severe shortages of special education teachers. It is expected that individuals who already live in and have ties to rural Mississippi communities and who are eligible for admission to a graduate degree program will become teachers for Mississippi schools through the MAT-X program.

4. SUPPORT: Letter is attached
5. PROPOSED 4-LETTER ABBREVIATION EXAR (Exceptional Children Alternate Route)
6. The proposed launch date in Fall 2015.
7. Contact Person: Devon Brenner, dgb19@msstate.edu, 325-7119

Appendix 8: New Degree Program Proposal

Institution:		
Date of Implementation:	**Six Year Cost of Implementation:**	**Per Student Cost of Implementation:**
Fall 2015	N/A	N/A

Program Title as will Appear on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Master of Arts in Teaching-Special Education	13.1001

Degree(s) to be Awarded:	**Credit Hour Requirements:**
MAT-X	33

List any institutions within the state offering similar programs:

William Carey

Responsible Academic Unit(s):	**Institutional Contact:**
Curriculum, Instruction and Special Education	Devon Brenner

Check one of the boxes below related to SACS COC Substantive Changes.

[ ] **Proposed Program is Not a Substantive Change**	[X] **Proposed Program is a Substantive Change**

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	30	**Year One**	0
Year Two	30	**Year Two**	30
Year Three	35	**Year Three**	30
Year Four	35	**Year Four**	35
Year Five	40	**Year Five**	35
Year Six	40	**Year Six**	40
Total	210	**Total**	170

Program Summary:

The special education concentration in the Master of Arts in Teaching (MAT) degree program will provide alternate route licensure and the MAT degree to individuals who have a BA or BS in a non-teaching field. The program will be replace to the existing non-degree licensure program, Teach Mississippi Institute, and will add additional content and pedagogy coursework and increase the mentorship for new teachers through the internship from one semester to one year.

Institutional Executive Officer Signature _____ **Date** _____

Appendix 10: Report of Intent to Offer an Existing Degree Program by Distance Learning

Institution:		
Date of Initial Program Approval:	**Date of Implementation:**	**Cost of Implementation:**
Fall 2015	Fall 2015	N/A

Program Title as Appears on Academic Program Inventory, Diploma, and Transcript:	**Six Digit CIP Code:**
Master of Arts in Teaching-Special Education	13.1001

Degree(s) to be Awarded:	**Credit Hour Requirements:**
MAT-X	33

Percentage of Program Completed by Distance Learning:	**Percentage of Program Requiring Campus Visit:**
100%	0%

Will students be allowed to mix on-campus and distance learning courses within this program?	NO
Will this program require separate admission from those offered on-campus?	**N/A**
Will this program have different fees or tuition rates from those offered on-campus?	Yes

Responsible Academic Unit(s):	**Institutional Contact:**
Curriculum, Instruction and Special Education in the MSU College of Education	Devon Brenner

Number of Students Expected to Enroll in First Six Years:		**Number of Graduates Expected in First Six Years:**	
Year One	30	**Year One**	0
Year Two	30	**Year Two**	30
Year Three	35	**Year Three**	30
Year Four	35	**Year Four**	35
Year Five	40	**Year Five**	35
Year Six	40	**Year Six**	40
Total	210	**Total**	170

Program Summary:

The special education concentration in the Master of Arts in Teaching (MAT) degree program will provide alternate route licensure and the MAT degree to individuals who have a BA or BS in a non-teaching field. The program will be replace to the existing non-degree licensure program, Teach Mississippi Institute, and will add additional content and pedagogy coursework and increase the mentorship for new teachers through the internship from one semester to one year.

Institutional Executive Officer Signature **Date**

IHL Degree Program Proposal Information

Note: This proposal does not create a new degree but a new concentration with in the existing MAT degree in Curriculum, Instruction, and Special Education. The MAT-X will join the MAT-S and MAT-S as alternate route programs for teacher licensure offered by CISE at MSU. The questions below are answered for thoroughness but no proposal to IHL is needed at this point in time.

1. Describe how the degree program will be administered including the name and title of person(s) who will be responsible for curriculum development and ongoing program review.

   The program will be administered through the department of Curriculum, Instruction, and Special Education. Dr. Devon Brenner, Department Head of CISE, and Dr. Teresa Jayroe, Associate Dean of the College of Education, along with special education faculty, will be responsible for curriculum development and ongoing program review. The program will be administered as a concentration in the MAT degree program in the College of education and will be coordinated by the Center for Distance Education. Faculty include:

   Bethany McKissick Ph. D. in Special Education, University of North Carolina, 2012
   Kent Coffey Ed.D. in Special Education at the University of Alabama, 1992
   Sandy Devlin Ed. D in Special Education at the University of Alabama
   Penny Craven PhD 2009 in special education at Mississippi State University.

   The program will be administered as a concentration in the Master of Arts in Teaching degree program in the College of Education and the CISE department and coordinated by the Center for Distance Education.

2. Describe the educational objectives of the degree program including the specific objectives of any concentrations, emphases, options, specializations, tracks, etc.

   The Master of Arts in Teaching degree program is based on the requirements for alternate route licensure established by the Mississippi Department of Education. The special education concentration is based on the standards for Special Education established by the Council for Exceptional Children. The MAT-X will replace the existing Teach Mississippi Institute program already in place. The TMI program leads to licensure but does not provide in-depth teacher education or lead to a Master's degree.

3. Describe any special admission requirements for the degree program including any articulation agreements that have been negotiated or planned.

   In addition to the regular admission requirements of the graduate school, admission

requirements will include those established by the Mississippi Department of Education for alternate route degree programs, including passing the Praxis CORE exam, Praxis II in special education, and a certified background check. In addition, after the first summer of courses, students in the degree program must obtain full time employment as a teacher of record in a special education classroom. This is a licensure requirement.

4. Describe the professional accreditation that will be sought for this degree program. If a SACS visit for substantive change will be necessary, please note.

   As with all other teacher education programs in the state and at our institution, this program will be accredited by NCATE (National Council for the Accreditation of Teacher Education) and CAEP (Council for the Accreditation of Education Programs) and by the relevant specialized program area (The Council for Exceptional Children). In addition, the program will undergo the Mississippi Department of Education annual Process and Performance Review.

5. Describe the curriculum for this degree program including the recommended course of study (appending course descriptions for all courses) and any special requirements such as clinical, field experience, community service, internships, practicum, a thesis, etc.

   See above.

6. Describe the faculty who will deliver this degree program including the members' names, ranks, disciplines, current workloads, and specific courses they will teach within the program. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added.
   Faculty include:
   - Bethany McKissick, Assistant Professor, Ph. D. in Special Education, University of North Carolina at Charlotte, Charlotte NC, 2012
   - Kent Coffey, Professor, Ed.D. in Special Education at the University of Alabama, 1992
   - Sandy Devlin, Professor, Ed.D. in Special Education at the University of Alabama
   - Penny Craven, Assistant Professor, PhD 2009 in special education at Mississippi State University

7. Describe the library holdings relevant to the proposed program, noting strengths and weaknesses. If there are guidelines for the discipline, do current holdings meet or exceed standards?

   Sufficient library resources exist to support the MAT-X degree program. The MSU libraries hold a number of relevant journals in both paper and electronic format, and sufficient books. The MSU Libraries work cooperatively with distance students to provide access to all resources, both online and in paper format, no matter where students are located. In addition, the MSU Libraries have expended thousands of dollars in holdings development in relevant

discipline areas over the last two years.

8. Describe the procedures for evaluation of the program and its effectiveness in the first six years of the program, including admission and retention rates, program outcome assessments, placement of graduates, changes in job market need/demand, ex-student/graduate surveys, or other procedures.

Several procedures will be in place to evaluate the effectiveness of the degree program. Careful records of recruitment, enrollment, and graduation rates will be maintained by the project coordinators for alternate route licensure in the CISE department. Outcome assessments will be collected on an annual basis as part of our Institutional Effectiveness review. All students enrolled in the degree program must necessarily be employed in a school district in order to continue into the second and third semesters of the degree program, a licensure requirement. Students must be teaching full time to enroll in the Internship courses. The concentration will be evaluated by NCATE/CAEP accreditation on a regular basis.

9. What is the specific basis for formulating the number of graduates expected in the first six years?

Estimated graduation rates are based on enrollment in the Teach Mississippi Institute. Approximately 40 to 50 individuals complete Teach Mississippi Institute requirements each year and become special educators in Mississippi schools. The vast majority of these individuals express a desire to continue and earn the MAT degree. The MAT degree provides both greater teacher education and a pay raise upon completion.

Master of Arts in Teaching

Program Entrance Requirements	1. Bachelor's degree (non-education) from a regionally/nationally accredited institution of higher learning 2. **CORE** (Core Academic Skills for Educators) 3. Praxis II (Specialty Area Test) *(Test registration and information is available from Educational Testing Service, 1-800-772-9476 or http://www.ets.org)*
Subject Areas of Licensure (The attached numbers are the Praxis II Specialty Area Test Codes)	Art-0134 or 5134, Biology-0235 or 5235, Business-0101 or 5101, Chemistry-0245 or 5245, Chinese-5665, Economics-0911, *Elementary Education (grades 4-6)-0014 or 5014, English-5038, French-5174, German-5183, Health-5551, Home Economics-0121 or 5121, Latin-0601, Library Media-0311 or 5311, Marketing-0561, Math-5161, Music-5113, Physical Education-0091 or 5091, Physical Science- 0481, Physics-0265 or 5265, Social Studies-0081 or 5081, Spanish-5195, **Special Education- 0354 or 5354, Speech Communications-0221 or 5221 **NOTE: BEGINNING SEPTEMBER, 2014, NEW TEST CODES WILL BE OFFERED BY EDUCATIONAL TESTING SERVICE FOR ELEMENTARY EDUCATION (TEST #5018) AND HOME ECONOMICS (TEST #5122). ALSO, PHYSICAL SCIENCE (TEST #0481) WILL NO LONGER BE ADMINISTERED BY ETS AFTER JUNE, 2014, SO THAT ENDORSEMENT WILL NO LONGER BE OFFERED THROUGH ALTERNATE ROUTE CERTIFICATION.**
Requirements for initial Three Year Alternate Route License **(non-renewable)**	Enroll in a MAT program and complete six (6) graduate hours pre-teaching course requirements from an approved Master of Arts in Teaching program. The courses are: * Tests and Measurements * Classroom Management **Upon completion of 6 hours**: 1. Applicant must contact the MAT college/university attended and request an online recommendation, after the coursework is completed. The applicant must then apply to the online recommendation in the Educator Licensure Management System (ELMS) https://sso.mde.ms.gov/Login/Login.aspx . 2. Sealed transcripts from all college coursework, including bachelor's degree and six hours of MAT program, must be sent to the Office of Educator Licensure. The transcript(s) must be submitted in a sealed envelope(s) bearing the seal or signature of the registrar. The Office of Educator Licensure is also now accepting electronic transcripts through eScrip-Safe from those institutions that are members of eScrip and can send electronic transcripts. *The electronic transcript must be sent directly from the institution to the Mississippi Department of Education.* 3. Praxis CORE and subject area scores must be on file in the ELMS account. To verify that scores were sent from ETS, the applicant can click on "Tests" in ELMS. ***The initial MAT license is a three-year license issued only at the bachelor's level*** ***Supplemental endorsements may be added to a three-year MAT license*** *See* http://www.mde.k12.ms.us/educator-licensure/supplemental-endorsements ***for adding supplemental endorsements.***

Location and Contact Information	Alcorn State University, 601-877-6149 Belhaven College, 601-965-7046 Delta State University, 662-846-4380 Jackson State University, 601-979-2335 Mississippi College, 601-925-3250 MS Valley State University, 662-325-0366 **William Carey College, 601-318-6144 Mississippi State University, 662-325-0366 Mississippi State University's Meridian Campus , 601-484-0175 *MS University for Women, 662-329-7175 *University of Southern MS, 601-266-4568 (additional coursework required) University of Mississippi, 662-915-7063 **Elementary Grades 4-6 is not offered at these locations.* ***William Carey University is the only location approved for Special Education. More information can be obtained at the following link:* http://www.wmcarey.edu/master-education-art-teaching-alternate-route .
Requirements for Five Year Alternate Route License **(renewable)**	**Completion of six additional graduate hours including supervised internship prescribed by the participating institution** **Upon completion of internship requirement**: 1. Applicant must contact the MAT college/university attended and request an online recommendation, after the coursework is completed. The applicant must then apply to the online recommendation in the Educator Licensure Management System (ELMS) https://sso.mde.ms.gov/Login/Login.aspx . 2. Sealed transcript of internship from MAT program must be sent to the Office of Educator Licensure. The transcript must be submitted in a sealed envelope bearing the seal or signature of the registrar. The Office of Educator Licensure is also now accepting electronic transcripts through eScrip-Safe from those institutions that are members of eScrip and can send electronic transcripts. *The electronic transcript must be sent directly from the institution to the Mississippi Department of Education.* 3. NOTE: If the applicant has also graduated from a Master's degree program, an application to "upgrade" the license should be submitted online in ELMS. Choose "upgrade" from the applications button in the ELMS account. The official transcript submitted for an "upgrade" must show a conferred Master's degree.
Program Fees	Colleges charge normal fees for 12 semester hours

Mississippi State University
Department of Curriculum and Instruction
Box 9705
Mississippi State, MS 39762
(662) 325-3747
(662) 325-7857 Fax

September 10, 2014

Box Council, College of Education
University Committee on Courses and Curricula
Post Office Box 5268
Mississippi State, MS 39762

Dear Sir or Madam,

The special education faculty unanimously support the MAT-X degree program.

Sincerely,
Special Education Faculty

Kent Coff 9/10/14
Bethany McKissick 9-10-14
Sandy Ahne 9-10-14
9/15/14