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UNIVERSITY COMMITTEE ON
COURSES AND CURRICULA

A MEMORANDUM

DATE: December 3, 2014

TO: UCCC Members

FROM: Kirk Swortzel, Chair

SUBJECT: December 16, 2014 Meeting

Enclosed are the minutes from the meeting on November 21, 2014 and the agenda and course proposals for the meeting on **Tuesday, December 16, 2014 at 9:00 a.m.** The December 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: November 21, 2014 Meeting Minutes
Course/Curriculum Proposals

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AGENDA
UNIVERSITY COMMITTEE ON COURSES AND CURRICULA
December 16, 2014

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

ARTS AND SCIENCES

Addition	AN 3343	Introduction to Forensic Anthropology
+Distance	FLF 1113	French I
+Distance	FLF 1123	French II
+Distance	FLF 2133	French III
Addition	GS 4263	Gender Communication
Addition	PSY 8693	Advanced Cognitive Science Research Skills
Addition	PSY 8703	Advanced Cognitive Science
Addition	PSY 8763	Expertise and Cognitive Skill Acquisition
Addition	PSY 8773	Distributed Representations in Cognition
Addition	PSY 8783	Cognitive Science Professional Skills
Addition	PSY 8793	Advanced Cognitive Science Professional Skills
Addition	REL 3033	Theory and Method in the Study of Religion
Addition	REL 3133	Seminar in Religion

EDUCATION

Addition	EDS 8113	Classroom Management in Secondary Education
Addition	EDS 8153	Professional Roles of the Secondary Educator
Addition	EDS 8896	Secondary Internship II

ENGINEERING

+Distance	CME 9000	Dissertation Research/Dissertation in Computational Engineering
Add	ECE 8833	Computational Intelligence

4. **Degree proposals by college/school:**

ARTS AND SCIENCES

Modification	Ph.D.	Psychology/Applied Psychology/Applied Cognitive Science

EDUCATION

Modification	BS	Kinesiology/Sport Studies

ENGINEERING

+Distance	MS	Computational Engineering
+Distance	Ph.D.	Computational Engineering

University Committee on Courses and Curricula
Mississippi State University
November 21, 2014

Present: Amy Adkerson, Kari, Babski-Reeves, Russell Carr, Mike Cox, Amy Crumpton, Hope Durst, Dana Franz, Robert Harland, Kevin Hunt, Mitzy Johnson, Scott Montgomery, Rob Moore, Bob Otondo, Tommy Parker, Andy Perkins, Melinda Pilkinton, Johnny Richwine, John Rigsby, Kathy Sherman-Morris, Jack Smith, Barry Stewart, Pam Sullivan, Kirk Swortzel, Jenny Turner, Mark Welch, Tom White, Robert Wolverton, Chien Yu

Excused: Jo Jo Dodd, Skip Jack, Olivia McCain, Lynda Moore, Kelly Moser, Emily Owen, John Riggins

Proxy: Grant Nerren for Olivia McCain, Robert Wolverton, Jr. for Pat Matthes

Guests: Devon Brenner, Nick Fitzkee, David Jones, Adam Love, Robert McGrew, Phyllis Miller, Rodney Pearson, Kevin Rogers, Brecken Rush, Emily Ryalls, Rubin Shmulsky, Laura Smith, Sol Pelaez, Floyd Wilson

Swortzel called the meeting to order at 1:30 p.m. on Friday, November 21, 2014 in room 324 of the Student Union. Sworzel updated the committee on the online submission system for courses. Hunt moved to approve the minutes from the October 17, 2014 UCCC meeting, and Pilkinton seconded the motion. The minutes were approved unanimously.

Hunt moved to bring back to the table the addition of a Bachelor of Science in Sustainable Bioproducts, the modification of 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, 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; and the addition and Maymester authorization for SBP 2012. Pilkinton seconded the motion. The proposals were tabled at the October 17, 2014 UCCC meeting. Committee members discussed the revisions made to the course and program proposals. Carr called the question. The Bachelor of Science in Sustainable Bioproducts and the course requests were approved with one committee member abstaining.

Franz moved to approve the addition of distance education to EDE 3233 and EDE 3343, and the deletion of EDS 9603. The proposals were continued from the October 17, 2014 UCCC meeting. Carr seconded the motion. The motion to add distance education to EDE 3233 and EDE 3343; and delete EDS 9603 was approved unanimously.

Franz moved to approve the deletion of EDX 4423; the modification of EDX 8393, EDX 3223, EDX 3233, EDX 4113, EDX 4123, EDX 4133, EDX 4353, EDX 4413, EDX 4503, EDX 4603, EDX 4613, EDX 4623, EDX 6173, EDX 8023, EDX 8053, EDX 8143, EDX 8163, EDX 8173, EDX 8213, EDX 8233, EDX 8303, EDX 8403; and the modification and distance approval of the Master of Arts in Teaching. Otondo seconded the motion. For EDX 8393, committee members felt the hours on the course outline need to be broken down into more detail; the prerequisites are not consistent; a grading scale needs to be included in the syllabus; there needs to be clarification about whether this is a seminar or lecture; and there needs to be clarification on the evaluation of student programs. For the other proposals, the committee was concerned that while practicums were removed from some of the courses, additional contact hours were not added; and there is inconsistent language concerning the students. The committee recommended the 30 character abbreviations be easier to recognize. Cox moved to table the about EDX course proposals and the program proposal. Crumpton seconded the motion. The motion to table the EDX course proposals and the program proposal was approved unanimously.

Crumpton moved to approve the addition of MU 2521 Steel Drum Ensemble and MUE 3233 Guitar Pedagogy. Harland seconded the motion. Committee members were concerned the proposal for MU 2521 does not contain a grading scale. Franz moved to pass MU 2521 contingent upon a grading scale being inserted into the proposal. Otondo seconded the motion to pass contingent. The motion to pass MU 2521 Steel Drum Ensemble contingent was approved unanimously. MUE 3233 Guitar Pedagogy was then approved unanimously.

Crumpton moved to approve the addition of 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, and SS 4503 Sport Promotion and Sales Management. Otondo seconded the motion. Dr. Adam Love appeared in support of the proposal. Committee members were concerned that in the proposals for SS 3503 and SS 3603, the final assessments were included in the syllabi but were left off the section on student progress. In the proposal for SS 4503, it is not clear how graduate students will be graded as leaders and how that factors into their regular grade. Harland moved to approve the SS 2103, SS 3503, SS 3603, SS 3703 and SS 4503 contingent upon the above concerns being addressed. Babski-Reeves seconded the motion. The motion to pass contingent was approved unanimously.

Stewart moved to approve the addition of CH 8613 Methods in Biophysical Chemistry, and the modifications of CH 1043 Survey of Chemistry I, CH 1051 Experimental Chemistry, and CH 1053 Survey of Chemistry II. Sherman-Morris seconded the motion. For CH 1043 and CH 1051, committee members pointed out the proposals need to break down the contact hours in further detail. Otondo moved to pass CH 1043 Survey of Chemistry I and CH 1051 Experimental Chemistry contingent upon the above concerns being addressed. Franz seconded the motion to pass contingent. The motion to pass CH 1043 and CH 1051 contingent was approved

unanimously. The committee then voted on the motion to approve CH 8613 and CH 1053, and the motion to approve passed unanimously.

Sherman-Morris moved to approve the addition of CO 4263 Gender Communication. Crumpton seconded the motion. The proposal for the Gender Studies course that CO 4263 will be cross listed with has not been submitted yet. Otondo moved to pass CO 4263 contingent upon the above concerned being addressed. Rigsby seconded the motion. The motion to pass contingent was approved unanimously.

Harland moved to approve the modifications of FLS 1113 Spanish I, FLS 1123 Spanish II, and FLS 2133 Spanish III. Franz seconded the motion. Dr. Sol Pelaez appeared in support of the proposals. Committee members were concerned about how the final exam will be given by distance since the exam calendar included in the proposal is the face to face calendar; Meridian needs to be deleted as a campus that offers the courses; and typographical errors need to be corrected in the proposals. Pilkinton moved to approve FLS 1113, FLS 1123, and FLS 2133 contingent upon the above concerns being addressed. Rigsby seconded the motion. The motion to approve FLS 1113, FLS 1123, and FLS 2133 contingent upon the above concerns being addressed was approved unanimously.

Pilkinton moved to approve the modifications of PSY 8450 Applied Clinical and PSY 8460 Professional Practicum. Crumpton seconded the motion. Committee members pointed out the proposals do not explain how many contact hours are required for each credit hour making the expectations unclear and do not specify how many times these classes may be repeated. Franz moved to table. Crumpton seconded the motion. The motion to table PSY 8450 and PSY 8460 was approved unanimously.

Franz moved to approve the modification of HS 8823 Advanced Theories of Human Development and Family Relations. Crumpton seconded the motion. The motion to approve passed unanimously.

Crumpton moved to approve the addition of HS 2573 Fashion Portfolio Development. Otondo seconded the motion. The motion to approve passed unanimously.

Stewart moved to approve the modification of PSS 4103 Forage and Pasture Crops. Cox seconded the motion. The motion to approve passed unanimously.

Cox moved to approve the addition of an MS in Plant and Soil Sciences and a Ph.D. in Plant and Soil Sciences. Stewart seconded the motion. The motion to approve passed unanimously.

Crumpton moved to approve ART 3643 Art of the Graphic Novel. Franz seconded the motion. Committee members felt the learning objectives needed to be clarified, there needs to be further breakdown of the coursework on the syllabus and some typographic errors need to be corrected. Pilkinton moved to table the proposal. Franz seconded the motion. The motion to table was approved with one committee member abstaining.

Otondo moved to approve the addition of BIS 1523 Web Development I, BIS 2523 Web Development II, BIS 3523 Advanced Languages I, BIS 4523/6523 Advanced Languages II, and the modification of the Bachelor of Business Administration/Business Information Systems. Rigsby seconded the motion. Dr. Rodney Pearson appeared in support of the proposals. Committee members were concerned the points deducted for absences in BIS 3523 might be in conflict with university policy; the learning objectives for BIS 3523 were not on the syllabus; and the instructor for BIS 4523/6523 needs graduate level approval. Hunt moved BIS 1523, BIS 2523, BIS 3523, BIS 4523/6523 and the program modification be passed contingent upon the above concerns being addressed. Moore seconded the motion. The motion to pass contingent was approved unanimously.

Otondo moved to approve the modification of BL 4243 Legal Aspects of Entrepreneurship, FIN 4323 Entreprenurial Finance, MKT 4423 Strategic Brand Management, and the modification of the minor in Entrepreneurship. Dr. Kevin Rogers appeared in support of the proposals. Moore seconded the motion. The motion to approve passed unanimously.

Rigsby moved to approve the modifications of ASE 6013 Directed Project in ASE, ASE 7000 Directed Individual Study, and CME 8000. Stewart seconded the motion. The motion to approve passed unanimously.

Rigsby moved to approve the addition and distance approval of CSE 4363/6363 Software Reverse Engineering. Hunt seconded the motion. Committee members were concerned there no learning objectives in the syllabus. Crumpton moved to pass CSE 4363/6363 contingent upon the above concern being addressed. Rigsby seconded the motion. The motion to pass CSE 4363/6363 contingent was approved unanimously.

Rigsby moved to approve CVM 8033 Poultry Histopathology and CVM 8822 Advanced Surgical Techniques. Stewart seconded the motion. The motion to approve CVM 8033 Poultry Histopathology was approved unanimously. For CVM 8822, committee members were concerned the contact hours were not broken down in greater detail, the course description and grading scale need to be clarified, whether the cellular telephone policy was consistent with university policy, and the number of times the course meets needs to be corrected on the proposal. Hunt moved to pass CVM 8822 contingent upon the above concerns being addressed. Crumpton seconded the motion. The motion to pass CVM 8822 contingent was approved unanimously.

Otondo moved to adjourn. Crumpton seconded the motion. The motion to adjourn was approved unanimously. The meeting was adjourned at 5:50 p.m.

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: Arts & Sciences **Department:** Psychology

Contact Person: Jarrod Moss **Mail Stop:** 9514 **E-mail:** jarrod.moss@msstate.edu

Nature of Change: Modification **Date:** 9/29/14

Program will be offered at: Starkville (Campus 1)

Current Degree Program Name: Doctor of Philosophy **Effective Date:** 8/16/15

Major: Applied Psychology **Concentration:** Applied Cognitive Science

New Degree Program Name: Doctor of Philosophy

Major: Applied Psychology **Concentration:** Applied Cognitive Science

Summary of Proposed Changes:

The curriculum is being revised to include more discipline-specific 8000-level courses to replace a number of 6000-level courses. These courses are designed to improve the training of our students especially with regards to their knowledge of theories in cognitive science. Also, a set of cognitive science research and professional skills courses is being incorporated in the curriculum to increase the preparation and employability of the graduates.

Department Head

Chair, College or School Curriculum Committee

Dean of College or School

Chair, University Committee on Courses and Curricula

Chair, Graduate Council (if applicable)

Chair, Deans Council

☐ SACS Letter Sent

1. Catalog Description

No changes are being proposed to the catalog description as shown in the table below.

2. Curriculum Outline

CURRENT Degree Description	PROPOSED Degree Description
Degree: Doctor of Philosophy Major: Applied Psychology Concentrations: (1) Applied Cognitive Science; (2) Clinical	Degree: Doctor of Philosophy Major: Applied Psychology Concentrations: (1) Applied Cognitive Science; (2) Clinical
The Department of Psychology offers a doctoral degree in Applied Psychology. The objective of the program is to train applied psychologists for employment in business, industry, engineering, college, university, clinical, and other applied settings. Concentrations are offered in the areas of Applied Cognitive Science and Clinical.	The Department of Psychology offers a doctoral degree in Applied Psychology. The objective of the program is to train applied psychologists for employment in business, industry, engineering, college, university, clinical, and other applied settings. Concentrations are offered in the areas of Applied Cognitive Science and Clinical.
Description of the Applied Cognitive Science ("Cognitive") concentration in Applied Psychology: The Cognitive concentration focuses on the interplay and *linkages between* cognitive psychology, *advances in computer science and engineering*, the varying cognitive abilities of individuals, and demands for people to use technology more easily and efficiently. Description of the Clinical concentration in Applied Psychology: The Clinical concentration focuses on the study and application of psychological science involving both normal and pathological human behavior, drawing from the cognitive, social, and biological arenas as well as computer science and advanced technologies.	Description of the Applied Cognitive Science ("Cognitive") concentration in Applied Psychology: The Cognitive concentration focuses on the interplay and **applications of** cognitive psychology, **computational models of cognition**, the varying cognitive abilities of individuals, and demands for people to use technology more easily and efficiently. Description of the Clinical concentration in Applied Psychology: The Clinical concentration focuses on the study and application of psychological science involving both normal and pathological human behavior, drawing from the cognitive, social, and biological arenas as well as computer science and advanced technologies.

CURRENT CURRICULUM OUTLINE	Required Hours	**PROPOSED CURRICULUM OUTLINE**	Required Hours
Major Required Courses		Major Required Courses	
Research Methods and Quantitative Core	10	Research Methods and Quantitative Core	10
PSY 8214 Quant. Methods in Psych II PSY 8803 Advanced Quant. Methods PSY 8513 Psychological Research Method		PSY 8214 Quant. Methods in Psych II PSY 8803 Advanced Quant. Methods PSY 8513 Psychological Research Method	
Dissertation Hours PSY 9000 Dissertation/research	21	Dissertation Hours PSY 9000 Dissertation/research	21
Applied Cognitive Science Concentration Courses		Applied Cognitive Science Concentration Courses	
Cognitive Science Core: *PSY 6653 Cognitive Science* PSY 8713 Issues and Methods in Cog Psy	6	Cognitive Science Core: **PSY 8703 Advanced Cognitive Science** PSY 8713 Issues and Methods in Cog Psy	6

Cognitive Science Integration - *3 hours from following list:* *CSE 6633 Artificial Intelligence* PSY 8723 Cognitive Models of Skill *CSE 8633 Natural Language Processing* *PHI 6143 Philosophy of Science* *EN 6403 Introduction to Linguistics*	3	Cognitive Science Integration PSY 8723 Cognitive Models of Skill **PSY 8773 Distributed Representations in Cognition**	**6**
Applied Cognitive Integration - 3 hours from following list: *PSY 6753 Applied Cognitive Psychology* *IE 8153 Cognitive Engineering* *PSY 6123 Psych of Human-Computer Interaction* *IE 6113 Human Factors Engineering* *MKT 8413 Seminar in Consumer Behavior*	3		
Cognitive Psychology Integration - *3 hours from following list:* *PSY 6423 Sensation/Perception* *PSY 6733 Memory* *PSY 6713 Language & Thought*	*3*	Cognitive Psychology Integration - **6 hours from following list:** **PSY 8743 Perception and Attention** **PSY 8753 Advanced Memory** **PSY 8763 Expertise and Skill Acquisition**	**6**
Advanced Graduate Seminars PSY 8653 Applied Cognitive Reading Sem.	*9*	Advanced Graduate Seminars PSY 8653 Applied Cognitive Reading Sem.	**6**
Graduate Electives - 9 hours may be from following list: *PSY 8313 Developmental Psychology* *PSY 8613 Advanced Social Psychology* *PSY 6983 Psychology of Aging* *PSY 6523 Industrial Psychology* *CSE 8633 Natural Language Processing* *CSE 8663 Neural Computing* *IE 8343 Artificial Intelligence in Manufacturing* *IE 8783 Neural Networks in Optimization* *SO 6413 Aging and Retirement* *COE 6713 Issues in Aging* *MKT 8313 Marketing Policies* *MKT 8343 Seminar In Marketing-Pricing and Product Strategies* *BIS 8112 Management Information Systems*	*9*	**Research & Professional Skills:** **PSY 8683 Cognitive Science Research Skills** **PSY 8693 Advanced Cognitive Science Research Skills** **PSY 8783 Cognitive Science Professional Skills** **PSY 8793 Advanced Cognitive Science Professional Skills**	**12**
Cognitive Science Seminar PSY 8731 Applied Cognitive Science Research Seminar	*8*	Cognitive Science Seminar PSY 8731 Applied Cognitive Science Research Seminar	**5**
Cognitive concentration hours:	41	Cognitive concentration hours:	41
Total doctoral hours for the cognitive concentration:	72	Total doctoral hours for the cognitive concentration:	72

Clinical Concentration Courses		Clinical Concentration Courses	
PSY 8713 Issues and Methods in Cog Psy	3	PSY 8713 Issues and Methods in Cog Psy	3
PSY 8313 Developmental Psychology	3	PSY 8313 Developmental Psychology	3
PSY 8613 Advanced Social Psychology	3	PSY 8613 Advanced Social Psychology	3
PSY 8233. Ethics and Professional Issues in Clinical Psychology.	3	PSY 8233. Ethics and Professional Issues in Clinical Psychology.	3
EPY 8113 History and Systems of Psychology	3	EPY 8113 History and Systems of Psychology	3
COE 8073 Multicultural Foundations in Counseling	3	COE 8073 Multicultural Foundations in Counseling	3
PSY 9730 Doctoral Internship in Applied Psychology	9	PSY 9730 Doctoral Internship in Applied Psychology	9
Clinical concentration hours:	27	Clinical concentration hours:	27
Total doctoral hours for the clinical concentration:	58	Total doctoral hours for the clinical concentration:	58

3. Justification and Student Learning Outcomes

All of the justification focuses on the cognitive concentration of our degree program because the clinical concentration is not being modified.

The rationale behind the modifications to the cognitive concentration originated from a self-evaluation of the program over the past two years. This evaluation identified two concerns that are being addressed in this curriculum revision.

1. Transitioning to 8000-level courses

The first concern is that our students are not being prepared by their coursework to engage in dissertation-level research. Students in their third year of the program are required to take two comprehensive exams that assess their knowledge of theories and computational models of cognition both broadly in the field (i.e., the General Exam) and in depth in their focus of research (i.e., the Specialty Exam). Students are allowed to take these exams a maximum of two times. Out of 12 students who took the General Exam in the past six years, one of these students passed on the first try, seven passed on a second try, and four students withdrew from the program after the first attempt. Of the eight students to make it through the General Exam and move on to the Specialty Exam, one passed on the first attempt, three passed after two attempts, three are in the process of completing the exam, and one withdrew from the program before completing the exam. The program faculty have carefully considered the role these exams play in assessing a student's preparedness for engaging in dissertation-level research and have compared our exam to others used in similar cognitive programs. Our conclusion has been that the exams are at an appropriate level of difficulty but that the majority of

our students are not prepared by their coursework to be able to comprehend and evaluate theories and models at a level appropriate for doctoral students.

The current program curriculum requires students to take core courses in cognitive science and cognitive psychology at the 4000/6000 level and allows students to complete up to 41% of their course hours in 4000/6000 courses. We think that students would be better prepared by moving to a required curriculum solely at the 8000 level. Historically, the program has been small since its inception in 1999 (growing to about 10-12 students in recent years) due to the number of faculty involved in the program (ranging from 3-5) and the resources devoted to the program. In fact, some of the rationale for the creation of the program was that it could take advantage of existing resources including many 4000 level courses. Only in the past two years has the department's emphasis on graduate education shifted from master's level education to doctoral education. This shift provides an opportune time for us to address the critical issue of our student's preparedness that would enable our students to progress more rapidly and successfully through the program.

This line of reasoning explains why we would like to replace Cognitive Science (PSY 6653) in the degree with Advanced Cognitive Science (PSY 8703) and the three 6000 courses in the current Cognitive Psychology Integration section with three courses at the 8000 level. We also have eliminated options in the Cognitive Science Integration section and the Applied Cognitive Integration section to have students focus on two courses (one existing course and a new course) that cover computational theories of cognitive processes.

Two potential concerns with these changes are that (1) other programs might rely on the 4000/6000 level courses we teach, and (2) we are limiting the options for our students to engage with other related disciplines. First, the department plans to continue to offer the 4000/6000 courses that we are replacing in the curriculum because they form a valuable part of our undergraduate curriculum including the undergraduate minor in cognitive science. Therefore, the removal of these courses from the doctoral curriculum poses no problem for other programs on campus.

With respect to the second concern, we have carefully considered how moving towards discipline specific 8000-level courses in the department could affect the breadth of training of students, and believe this to be our best option. Cognitive science is inherently an interdisciplinary area of study with contributions from psychology, computer science, human factors, linguistics, anthropology, philosophy, and other fields. However, since its inception, the program has evolved to have a strong cognitive psychology component, and requiring students to focus on core theoretical courses in cognition (some of which are cross-listed in IE and CSE) seems reasonable. Indeed, the core faculty of the cognitive science program at Mississippi State were all trained as cognitive psychologists and have ongoing collaborations with a number of associated faculty in other departments including computer science, linguistics, philosophy, and mechanical engineering. We are confident that these ongoing collaborations will provide sufficient breadth of exposure to disciplines associated with cognitive science and cognitive psychology for our students.

A secondary factor supporting this decision stems from the small number of core faculty (currently four with a fifth being hired this year) who serve as primary advisors to students in the program. Each faculty can support at most 3-4 students due to the intensive nature of research training. These constraints limit the overall size of the program and that in turn limits the number of students enrolled

in any one course. In order to ensure at least five students are enrolled in any one course we have had to either rely on undergraduates in 4000/6000 courses or offer courses such that multiple years of graduate students are in an 8000 level course (i.e., second year and third year students). In order to transition to 8000 level courses, we have to carefully sequence the courses into our teaching schedule so that each course enrolls two years worth of students. This requires both careful planning and control over when courses are taught. This control would be extremely difficult when coordinating across multiple departments. Also, many of our students have primarily been taking the psychology courses from these sets of options for years. One reason that many students have not taken the non-psychology options is that these options often require prerequisites in the other department that our students have not taken (e.g., the CSE Artificial Intelligence course understandably requires a programming background of CSE 1284, CSE 1384, CSE 2383, and CSE 2813). So this change is not likely to significantly impact the enrollment of any course outside of psychology. Our students are routinely encouraged to take courses outside of psychology relevant to their field of study that go beyond those required by our curriculum, and they will continue to be encouraged to do so.

To summarize this section:

- Our students need more theoretical preparation from their coursework that would be difficult to do in a class with mixed undergraduate/graduate enrollment
- We have replaced 6000 level courses with more advanced 8000 level courses to accomplish this preparation
- We have limited the course options for students to those most likely to lead to their preparation for doctoral research in cognitive science at MSU
- These changes will have minimal or no impact on other programs or departments on campus

2. Improving employability of students

The second concern motivating changes to our curriculum is that changes are needed to better prepare our students for finding positions in the rapidly changing field of cognitive science. As few as five to ten years ago, students coming out of graduate school with 1-2 peer-reviewed publications and basic behavioral experimental design experience would have had no problem finding a postdoctoral position. The same student today would need at least twice the number of publications and training in at least one advanced data collection technique (e.g., neuroimaging, genetics, eye tracking, computational modeling) in order to be competitive for postdoctoral positions. Postdoctoral training, while not required, has become the norm in both academic and industry positions in cognitive science.

In response to these changes in the field, many programs are beginning to add courses on research skills to their curricula to better prepare students for this competitive job market. A couple of examples are cognitive programs at the University of Indiana (described in more detail in the comparison to a top program below) and the University of Wisconsin (e.g., Psych 711 - Programming and Automation Techniques). We have designed a set of four courses in professional and research skills to address the need to better prepare students. These courses are described in more detail in the course proposals, but generally they were created to emphasize technical skills needed in research (i.e., research skills) such as computer programming and scripting to handle large and complex data sets that are common to advanced data collection techniques that students are learning in individual research labs. In addition, there are professional skills that students need to be prolific writers, secure external funding, give effective presentations, and operate a successful research lab.

Therefore we designed a two-course sequence on research skills in cognitive science (PSY 8683 and PSY 8693) and a two-course sequence on professional skills in cognitive science (PSY 8783 and PSY 8793). The issue of overlap with other departments is described in more detail in each course proposal, but the overall finding was that while some similar topics are taught as part of other courses (e.g., some programming concepts in computer science), the topics that we plan to teach are specialized for cognitive science and would only minimally overlap existing courses. For example, a module on programming in one of the research skills course might touch on concepts that are covered as parts of a couple of undergraduate courses in computer science, but it would not be an effective use of a cognitive science doctoral student's time to take multiple undergraduate courses to get these concepts.

To summarize this section:

- Our students need better preparation to enter the field of cognitive science that has changed over the last five to ten years
- Consistent with other doctoral programs in cognition, we have created courses to address these needs
- These four courses include a two-course sequence on technical research skills and a two-course sequence on professional skills

Required Program Review Elements

1. Comparison with leading academic program in the discipline

Because of the interdisciplinary nature of the field of cognitive science, it can be difficult to compare one program to another. Some cognitive science programs may focus more on neuroscience, while others focus more on computer science or psychology. Because the core of the cognitive science program at Mississippi State is cognitive psychology, we selected the cognitive science program at Indiana University – Bloomington because it incorporates a strong cognitive psychology program and it is consistently ranked in the top 10 in the nation.

Indiana's curriculum requires six core courses, 16 hours from a list of approved courses, and four semesters registered for the colloquium series.
Their core courses along with their course descriptions are:

- Q520 (Mathematics and Logic in Cognitive Science) - The course will cover the mathematical backgrounds of contemporary work in cognitive science. It will include basic material on both the symbolic and connectionist approaches and machines, logics, networks, games, and probability.
- Q530 (Programming Methods in Cognitive Science) - Introduction to computer programming methods for artificial intelligence and computer simulation of cognitive models. Emphasis on the necessary data structures and their applications to cognitive science. Programming projects may be related to state-space search for problem solving and game playing, production systems, and cognitive modeling including memory and neural simulations.
- Q540 (Philosophical Foundations of the Cognitive and Information Sciences) - Introduction to the philosophical foundations of cognitive and information sciences. Causal issues: cognitive architecture, physical embodiment, neuroscience, networks, dynamic systems, etc. Semantic issues: meaning, interpretation, representation, information flow. The role of both in language, logic, reasoning, action, perception, learning, categorization and consciousness

- Q550 (Models in Cognitive Science) - An introduction to modeling in various areas of cognitive science. Computer simulation models of complex cognition. Models within artificial intelligence. Models based on neural mechanisms and networks. Formal and mathematical models in areas such as psychology, linguistics, and philosophy
- Q551 (The Brain and Cognition) - An introduction to neural mechanisms underlying complex cognition, and a survey of topics in neuroscience related to cognition.
- Q560 (Behavioral Methods in Cognitive Science) - Specific goals of this course include: an understanding of experimental design and the resources for future studies; an understanding of converging measures and programmatic research; discussion of current controversies in experimental design; and hands-on experience designing, conducting, and critiquing experiments.

The content of these six core courses maps directly onto the concepts in our proposed curriculum even if the content is organized into courses slightly differently.

- Our Research Methods (PSY 8513) and Research Skills (PSY 8683) courses cover research methods in psychology (PSY 8513) and methods specific to cognitive science (PSY 8703). These courses map onto the content of Q560 at Indiana.
- Our Advanced Cognitive Science (PSY 8703) course covers the multidisciplinary background of cognitive science similar to Q520 and Q540 at Indiana. The introductory modeling content of Q520 and Q540 is also contained in our two computational modeling courses (PSY 8723 and PSY 8773).
- The Q550 modeling course at Indiana maps onto the advanced modeling content of our PSY 8723 and 8773 courses. In additional the distributed nature of brain representations taught in Q551 at Indiana is contained in our distributed models course PSY 8773.
- The programming course of Q530 maps onto the programming content we teach as part of Research Skills (PSY 8683) and Advanced Research Skills (PSY 8693).
- To summarize, the comparison with Indiana core courses highlighted at least three areas (foundations of cognitive science, programming, and computational modeling) that our existing curriculum did not cover as extensively. These areas are addressed to a greater degree in our proposed curriculum.

Indiana requires 16 additional hours from a larger set of approved courses in cognitive science. This course list includes doctoral courses in many departments because Indiana's program consists of over 80 faculty across more than a dozen departments. Because we have a much smaller core faculty (4-5) with a few affiliated faculty who regularly participate in our weekly research seminar (3-4 additional faculty), we focus on Indiana's offerings in the cognitive psychology area of their program. These courses include the following with the course mapping to our courses explained in **bold**:

- Q510 (Cognitive Science Professional Development) - Discussions in this course cover a wide range of issues facing academic cognitive scientist, including: the ethical conduct of research, grant proposal writing and review, critical reading of the scientific literature, scientific writing, presentation skills, applying for jobs, teaching, challenges facing underrepresented groups in science, and issues in cross-disciplinary collaboration. **This course has no equivalent in our existing curriculum, but it maps onto our Professional Skills and Advanced Professional Skills (PSY 8783 and 8793) courses in the proposed curriculum.**

- Q700 (Seminar in Cognitive Science) - Intensive study of specific topics in Cognitive Science. Topics and instructors will change regularly. May be repeated. **This course is equivalent to our existing PSY 8653 Applied Cognitive Reading Seminar course.**
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- P644 (Attention) - Analysis of the experimental literature and theories of human attention and short-term memory, including visual and verbal systems and forgetting. **This course maps onto our proposed PSY 8743 Perception and Attention cognition course.**
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- P553-P554 (Advanced Statistics in Psychology I-II) - Statistical inference applied to problems in psychological research. Experimental design and data interpretation. Elementary probability theory, statistical distribution, classical and nonparametric tests of hypotheses, point and interval estimation. Relations between statistical models and experimental controls. **This course maps onto our existing PSY 8214 and PSY 8803 Quantitative Methods courses.**

To summarize the results of our comparison to a top program, we found that many of our existing courses were equivalent to courses offered at Indiana with a few differences. The first difference is that all courses at Indiana were equivalent to the 8000 level at Mississippi State (i.e., graduate-only enrollment). The second difference is in the area of computational modeling and programming, and our proposed curriculum includes courses designed to emphasize these important areas. The final difference is in the lack of a course for professional skills, and our proposed curriculum includes professional skills courses. Therefore, we think that our proposed modifications will lead to our program more closely matching the curriculum in this top program in cognitive science.

2. Graduate assessment and feedback on preparedness for employment

As part of our self-evaluation we conducted a survey of our graduates. Given the relatively small size and age of the program, we have only had 7 graduates. We were able to get responses from all of these graduates (100%). We highlight the most significant responses to this questionnaire. First, we explained the difference between split-level and graduate-only courses and asked "One goal of our graduate courses is to provide an understanding of theoretical/computational cognitive mechanisms in a variety of domains. Which of the following do you think provides the best training opportunities for cognitive science graduate students?" For this question, 71% responded graduate-only courses would be better and the other 29% had no opinion. This response is consistent with our modification to include only 8000 level courses in our curriculum.

Most of our questions focused on the topic of the research and professional skills courses. In particular, we were interested in the topics that our graduates thought should be taught based on the professional experience they had acquired since graduating. 100% of our graduates reported that they were in positions that analyzed human data, and 86% responded that they used data collection and analysis techniques that required handling large amounts of data (e.g., neuroimaging, eye tracking). We provided a list of 15 topics that we were considering including in these skills courses, and the top ranked responses were as follows: 100% - applying for research grants, 86% - skills for publishing research, 86% - skills for automating data collection and analysis using programming, 86% - writing effective IRB protocols, 86% - managing research assistants, 86% - managing large research projects, 71% - programming for handling large data sets, 71% - conducting effective literature searches. We have used these responses in designing the research and professional skills courses that we are proposing as part of this curriculum modification.

We also provided the opportunity for graduates to give us some free form responses about courses or other content that they would like to see become a part of our curriculum. Some responses were:

- "I would like to see more focus placed on programming + data analysis in at least one major class"
- "Perhaps, some additional experience with grant writing or developing publications might have been helpful."
- "It's been a while but an emphasis on data science would be helpful. Encouraging additional statistics classes and communicating results to non-statisticians would also be very valuable."
- "Perhaps this is within the scope of the "research project management" topic, but research budget construction/planning would be useful.
- "I had a tremendous advantage in my professional career partly because of the opportunities I had to work on applied research projects. Few things are more valuable than having to simply solve real problems. I had to deal with everything from debugging software to finding ways to present complex data to naive audiences. To the extent that such opportunities are afforded your students, you will do them a great service. Additionally, the coaching I received on how to communicate in both written and oral forms has been invaluable. Being able to get to the "heart of the matter" even in informal work conversations is an indispensible skill."

To summarize, the results of our survey clearly show that the majority of our former graduates thought that an increase in 8000 level course work and research and professional skills would have increased their employability.

Required Question Responses

1. Will this program change meet local, state, regional, and national educational and cultural needs? If so, please describe.

   There is a clear need for more cognitive scientists. Cognitive science doctoral graduates are employed in both academic and non-academic positions. Non-academic positions include those in manufacturing (e.g., General Mills and Proctor & Gamble have cognitive science consultants in product design), computer software design (e.g., IBM employs cognitive scientists as usability analysts), human factors and ergonomics (e.g., Boeing uses cognitive scientists as consultants), marketing (e.g., one of our graduates is director of web analytics for American Girl), and

education (e.g., companies such as Carnegie Learning employ cognitive scientists to design curricula and intelligent tutoring systems).

As an example of the demand for cognitive scientists both regionally and nationally, a recent search on popular job websites in August 2014 found over 300 hits for ads that included "cognitive science" as a keyword including companies such as Panasonic, AT&T, Hitachi, Nuance, AutoTrader, Amazon, Bloomberg, Rosetta Stone, Blizzard, Pearson, Walmart, and Google. At least 40 of these positions were in the southeast region.

Our graduates are meeting local and regional needs. Many of our graduates are employed in the southeast with four being employed in Mississippi, one in Alabama, and one in Georgia. In addition, students and faculty in the cognitive science program engage in many interdepartmental collaborations including recent or ongoing collaborations with mechanical engineering, electrical engineering, architecture, computer science, and communication.

The proposed modifications to our curriculum are designed to provide our students with the skills and knowledge they will need to succeed in our doctoral program as well as in their research career. Therefore, these modifications will help to meet local, regional, and national needs.

2. Will this program change result in duplication in the System? If so, please describe.

   No. Mississippi State's cognitive science concentration is the only cognitive science Ph.D. program in the southeast region much less within the state. In addition, none of the courses being proposed are being taught at Mississippi State at this time.

3. Will this program change/advance student diversity within the discipline? If so, please describe.

   Many of our students come from minority groups or are international students. For example, currently 25% of our students are minority/international students. In the past six years, 28% of our enrolled students have been minority/international students. Cognitive Science is a STEM field (according to the Department of Education classification) and the proportion of doctoral degrees awarded in STEM fields to minorities is about 16% (2010 NSF data). Our program has a significant minority enrollment and therefore increasing the proportion of these students who complete their Ph.D. in our program will increase diversity in the field.

   The changes in our curriculum will provide our students with the skills and knowledge they will need to succeed in our doctoral program as well as in their research career. By better preparing our students, we expect that more of them will advance in the field and we expect that a greater proportion will be successful in completing the program.

4. Will this program change result in an increase in the potential placement of graduates in MS, the Southeast, and the U.S.? If so, please describe.

   Yes, as noted under question #1 above, many of our graduates have found positions in MS and the southeast. Better preparing our students can only increase the number of those successfully finding positions.

5. Will this program change result in an increase in the potential salaries of graduates in MS, the Southeast, and the U.S.? If so, please describe.

   The data from our survey of graduates clearly show that there are a number of topics in our proposed Research and Professional Skills courses that directly target skills needed in the careers our students have gone into. Increasing the preparation of our students by teaching these skills should increase the number of positions they are competitive for and lead to them competing for more lucrative positions.

4. Support

   A letter of support from the psychology department graduate curriculum committee is attached.

5. Proposed 4-Letter Abbreviation

   No change to the 4-letter abbreviation is needed.

6. Effective Date

   8/16/15 (Fall 2015 Semester)

MISSISSIPPI STATE UNIVERSITY

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September 29, 2014

University Committee on Courses and Curricula
Mississippi State University

Dr. Kirk Swortzel:

The Graduate Curriculum Committee in the Department of Psychology is pleased to write this letter of support for the degree modification proposal and the nine associated course proposals proposed by the Applied Psychology: Cognitive Science PhD program, listed below:

PSY 8683	PSY 8743	PSY 8753
PSY 8693	PSY 8763	PSY 8783
PSY 8773	PSY 8703	PSY 8793

The Graduate Committee vetted the degree modification and courses proposed, and voted unanimously to support this proposal. The full faculty also reviewed the degree modification and course proposals, and unanimously approved them on September 26th. The changes represented by this degree modification and supported by the proposed courses will advance the Cognitive Science PHD program to be more on par with peer programs and will go a long way toward optimizing graduate student training in the Cognitive Science program.

Thank you for your consideration.

Best regards,

Deborah K. Eakin
Associate Professor & Graduate Coordinator
Chair of the Graduate Curriculum Committee

Jarrod Moss
Associate Professor
Cognitive Science Program Director

Michael Nadorff
Assistant Professor
Director of Clinical Training

1. Catalog Description

No changes are being proposed to the catalog description as shown in the table below.

2. Curriculum Outline

CURRENT Degree Description		PROPOSED Degree Description	
Degree: Doctor of Philosophy Major: Applied Psychology Concentrations: (1) Applied Cognitive Science; (2) Clinical		Degree: Doctor of Philosophy Major: Applied Psychology Concentrations: (1) Applied Cognitive Science; (2) Clinical	
The Department of Psychology offers a doctoral degree in Applied Psychology. The objective of the program is to train applied psychologists for employment in business, industry, engineering, college, university, clinical, and other applied settings. Concentrations are offered in the areas of Applied Cognitive Science and Clinical.		The Department of Psychology offers a doctoral degree in Applied Psychology. The objective of the program is to train applied psychologists for employment in business, industry, engineering, college, university, clinical, and other applied settings. Concentrations are offered in the areas of Applied Cognitive Science and Clinical.	
Description of the Applied Cognitive Science ("Cognitive") concentration in Applied Psychology: The Cognitive concentration focuses on the interplay and *linkages between* cognitive psychology, *advances in computer science and engineering*, the varying cognitive abilities of individuals, and demands for people to use technology more easily and efficiently. Description of the Clinical concentration in Applied Psychology: The Clinical concentration focuses on the study and application of psychological science involving both normal and pathological human behavior, drawing from the cognitive, social, and biological arenas as well as computer science and advanced technologies.		Description of the Applied Cognitive Science ("Cognitive") concentration in Applied Psychology: The Cognitive concentration focuses on the interplay and **applications of** cognitive psychology, **computational models of cognition**, the varying cognitive abilities of individuals, and demands for people to use technology more easily and efficiently. Description of the Clinical concentration in Applied Psychology: The Clinical concentration focuses on the study and application of psychological science involving both normal and pathological human behavior, drawing from the cognitive, social, and biological arenas as well as computer science and advanced technologies.	
CURRENT CURRICULUM OUTLINE	Required Hours	**PROPOSED CURRICULUM OUTLINE**	Required Hours
Major Required Courses Research Methods and Quantitative Core PSY 8214 Quant. Methods in Psych II PSY 8803 Advanced Quant. Methods PSY 8513 Psychological Research Method Dissertation Hours PSY 9000 Dissertation/research	 10 21	Major Required Courses Research Methods and Quantitative Core PSY 8214 Quant. Methods in Psych II PSY 8803 Advanced Quant. Methods PSY 8513 Psychological Research Method Dissertation Hours PSY 9000 Dissertation/research	 10 21
Applied Cognitive Science Concentration Courses Cognitive Science Core: ~~*PSY 6653 Cognitive Science*~~ PSY 8713 Issues and Methods in Cog Psy	 6	Applied Cognitive Science Concentration Courses Cognitive Science Core: ~~**PSY 8703 Advanced Cognitive Science**~~ PSY 8713 Issues and Methods in Cog Psy	 6

Cognitive Science Integration - *3 hours from following list:* *CSE 6633 Artificial Intelligence* PSY 8723 Cognitive Models of Skill *CSE 8633 Natural Language Processing* *PHI 6143 Philosophy of Science* *EN 6403 Introduction to Linguistics*	3	Cognitive Science Integration PSY 8723 Cognitive Models of Skill **PSY 8773 Distributed Representations in Cognition**	**6**
Applied Cognitive Integration - 3 hours from following list: *PSY 6753 Applied Cognitive Psychology* *IE 8153 Cognitive Engineering* *PSY 6123 Psych of Human-Computer Interaction* *IE 6113 Human Factors Engineering* *MKT 8413 Seminar in Consumer Behavior*	3		
Cognitive Psychology Integration - *3 hours from following list:* *PSY 6423 Sensation/Perception* *PSY 6733 Memory* *PSY 6713 Language & Thought*	*3*	Cognitive Psychology Integration - **6 hours from following list:** **PSY 8743 Perception and Attention** **PSY 8753 Advanced Memory** **PSY 8763 Expertise and Skill Acquisition**	**6**
Advanced Graduate Seminars PSY 8653 Applied Cognitive Reading Sem.	*9*	Advanced Graduate Seminars PSY 8653 Applied Cognitive Reading Sem.	**6**
Graduate Electives - 9 hours may be from following list: *PSY 8313 Developmental Psychology* *PSY 8613 Advanced Social Psychology* *PSY 6983 Psychology of Aging* *PSY 6523 Industrial Psychology* *CSE 8633 Natural Language Processing* *CSE 8663 Neural Computing* *IE 8343 Artificial Intelligence in Manufacturing* *IE 8783 Neural Networks in Optimization* *SO 6413 Aging and Retirement* *COE 6713 Issues in Aging* *MKT 8313 Marketing Policies* *MKT 8343 Seminar In Marketing-Pricing and Product Strategies* *BIS 8112 Management Information Systems*	*9*	**Research & Professional Skills:** **PSY 8683 Cognitive Science Research Skills** **PSY 8693 Advanced Cognitive Science Research Skills** **PSY 8783 Cognitive Science Professional Skills** **PSY 8793 Advanced Cognitive Science Professional Skills**	**12**
Cognitive Science Seminar PSY 8731 Applied Cognitive Science Research Seminar	*8*	Cognitive Science Seminar PSY 8731 Applied Cognitive Science Research Seminar	**5**
Cognitive concentration hours:	41	Cognitive concentration hours:	41
Total doctoral hours for the cognitive concentration:	72	Total doctoral hours for the cognitive concentration:	72

Clinical Concentration Courses		Clinical Concentration Courses	
PSY 8713 Issues and Methods in Cog Psy	3	PSY 8713 Issues and Methods in Cog Psy	3
PSY 8313 Developmental Psychology	3	PSY 8313 Developmental Psychology	3
PSY 8613 Advanced Social Psychology	3	PSY 8613 Advanced Social Psychology	3
PSY 8233. Ethics and Professional Issues in Clinical Psychology.	3	PSY 8233. Ethics and Professional Issues in Clinical Psychology.	3
EPY 8113 History and Systems of Psychology	3	EPY 8113 History and Systems of Psychology	3
COE 8073 Multicultural Foundations in Counseling	3	COE 8073 Multicultural Foundations in Counseling	3
PSY 9730 Doctoral Internship in Applied Psychology	9	PSY 9730 Doctoral Internship in Applied Psychology	9
Clinical concentration hours:	27	Clinical concentration hours:	27
Total doctoral hours for the clinical concentration:	58	Total doctoral hours for the clinical concentration:	58

3. Justification and Student Learning Outcomes

All of the justification focuses on the cognitive concentration of our degree program because the clinical concentration is not being modified.

The rationale behind the modifications to the cognitive concentration originated from a self-evaluation of the program over the past two years. This evaluation identified two concerns that are being addressed in this curriculum revision.

1. Transitioning to 8000-level courses

The first concern is that our students are not being prepared by their coursework to engage in dissertation-level research. Students in their third year of the program are required to take two comprehensive exams that assess their knowledge of theories and computational models of cognition both broadly in the field (i.e., the General Exam) and in depth in their focus of research (i.e., the Specialty Exam). Students are allowed to take these exams a maximum of two times. Out of 12 students who took the General Exam in the past six years, one of these students passed on the first try, seven passed on a second try, and four students withdrew from the program after the first attempt. Of the eight students to make it through the General Exam and move on to the Specialty Exam, one passed on the first attempt, three passed after two attempts, three are in the process of completing the exam, and one withdrew from the program before completing the exam. The program faculty have carefully considered the role these exams play in assessing a student's preparedness for engaging in dissertation-level research and have compared our exam to others used in similar cognitive programs. Our conclusion has been that the exams are at an appropriate level of difficulty but that the majority of

our students are not prepared by their coursework to be able to comprehend and evaluate theories and models at a level appropriate for doctoral students.

The current program curriculum requires students to take core courses in cognitive science and cognitive psychology at the 4000/6000 level and allows students to complete up to 41% of their course hours in 4000/6000 courses. We think that students would be better prepared by moving to a required curriculum solely at the 8000 level. Historically, the program has been small since its inception in 1999 (growing to about 10-12 students in recent years) due to the number of faculty involved in the program (ranging from 3-5) and the resources devoted to the program. In fact, some of the rationale for the creation of the program was that it could take advantage of existing resources including many 4000 level courses. Only in the past two years has the department's emphasis on graduate education shifted from master's level education to doctoral education. This shift provides an opportune time for us to address the critical issue of our student's preparedness that would enable our students to progress more rapidly and successfully through the program.

This line of reasoning explains why we would like to replace Cognitive Science (PSY 6653) in the degree with Advanced Cognitive Science (PSY 8703) and the three 6000 courses in the current Cognitive Psychology Integration section with three courses at the 8000 level. We also have eliminated options in the Cognitive Science Integration section and the Applied Cognitive Integration section to have students focus on two courses (one existing course and a new course) that cover computational theories of cognitive processes.

Two potential concerns with these changes are that (1) other programs might rely on the 4000/6000 level courses we teach, and (2) we are limiting the options for our students to engage with other related disciplines. First, the department plans to continue to offer the 4000/6000 courses that we are replacing in the curriculum because they form a valuable part of our undergraduate curriculum including the undergraduate minor in cognitive science. Therefore, the removal of these courses from the doctoral curriculum poses no problem for other programs on campus.

With respect to the second concern, we have carefully considered how moving towards discipline specific 8000-level courses in the department could affect the breadth of training of students, and believe this to be our best option. Cognitive science is inherently an interdisciplinary area of study with contributions from psychology, computer science, human factors, linguistics, anthropology, philosophy, and other fields. However, since its inception, the program has evolved to have a strong cognitive psychology component, and requiring students to focus on core theoretical courses in cognition (some of which are cross-listed in IE and CSE) seems reasonable. Indeed, the core faculty of the cognitive science program at Mississippi State were all trained as cognitive psychologists and have ongoing collaborations with a number of associated faculty in other departments including computer science, linguistics, philosophy, and mechanical engineering. We are confident that these ongoing collaborations will provide sufficient breadth of exposure to disciplines associated with cognitive science and cognitive psychology for our students.

A secondary factor supporting this decision stems from the small number of core faculty (currently four with a fifth being hired this year) who serve as primary advisors to students in the program. Each faculty can support at most 3-4 students due to the intensive nature of research training. These constraints limit the overall size of the program and that in turn limits the number of students enrolled

in any one course. In order to ensure at least five students are enrolled in any one course we have had to either rely on undergraduates in 4000/6000 courses or offer courses such that multiple years of graduate students are in an 8000 level course (i.e., second year and third year students). In order to transition to 8000 level courses, we have to carefully sequence the courses into our teaching schedule so that each course enrolls two years worth of students. This requires both careful planning and control over when courses are taught. This control would be extremely difficult when coordinating across multiple departments. Also, many of our students have primarily been taking the psychology courses from these sets of options for years. One reason that many students have not taken the non-psychology options is that these options often require prerequisites in the other department that our students have not taken (e.g., the CSE Artificial Intelligence course understandably requires a programming background of CSE 1284, CSE 1384, CSE 2383, and CSE 2813). So this change is not likely to significantly impact the enrollment of any course outside of psychology. Our students are routinely encouraged to take courses outside of psychology relevant to their field of study that go beyond those required by our curriculum, and they will continue to be encouraged to do so.

To summarize this section:

- Our students need more theoretical preparation from their coursework that would be difficult to do in a class with mixed undergraduate/graduate enrollment
- We have replaced 6000 level courses with more advanced 8000 level courses to accomplish this preparation
- We have limited the course options for students to those most likely to lead to their preparation for doctoral research in cognitive science at MSU
- These changes will have minimal or no impact on other programs or departments on campus

2. Improving employability of students

The second concern motivating changes to our curriculum is that changes are needed to better prepare our students for finding positions in the rapidly changing field of cognitive science. As little as five to ten years ago, students coming out of graduate school with 1-2 peer-reviewed publications and basic behavioral experimental design experience would have had no problem finding a postdoctoral position. The same student today would need at least twice the number of publications and training in at least one advanced data collection technique (e.g., neuroimaging, genetics, eye tracking, computational modeling) order to be competitive for postdoctoral positions. Postdoctoral training, while not required, has become the norm in both academic and industry positions in cognitive science.

In response to these changes in the field, many programs are beginning to add courses on research skills to their curricula to better prepare students for this competitive job market. A couple of examples are cognitive programs at the University of Indiana (described in more detail in the comparison to a top program below) and the University of Wisconsin (e.g., Psych 711 - Programming and Automation Techniques). We have designed a set of four courses in professional and research skills to address the need to better prepare students. These courses are described in more detail in the course proposals, but generally they were created to emphasize technical skills needed in research (i.e., research skills) such as computer programming and scripting to handle large and complex data sets that are common to advanced data collection techniques that students are learning in individual research labs. In addition, there are professional skills that students need to be prolific writers, secure external funding, give effective presentations, and operate a successful research lab.

Therefore we designed a two-course sequence on research skills in cognitive science (PSY 8683 and PSY 8693) and a two-course sequence on professional skills in cognitive science (PSY 8783 and PSY 8793). The issue of overlap with other departments is described in more detail in each course proposal, but the overall finding was that while some similar topics are taught as part of other courses (e.g., some programming concepts in computer science), the topics that we plan to teach are specialized for cognitive science and would only minimally overlap existing courses. For example, a module on programming in one of the research skills course might touch on concepts that are covered as parts of a couple of undergraduate courses in computer science, but it would not be an effective use of a cognitive science doctoral student's time to take multiple undergraduate courses to get these concepts.

To summarize this section:

- Our students need better preparation to enter the field of cognitive science that has changed over the last five to ten years
- Consistent with other doctoral programs in cognition, we have created courses to address these needs
- These four courses include a two-course sequence on technical research skills and a two-course sequence on professional skills

Required Program Review Elements

1. Comparison with leading academic program in the discipline

Because of the interdisciplinary nature of the field of cognitive science, it can be difficult to compare one program to another. Some cognitive science programs may focus more on neuroscience, while others focus more on computer science or psychology. Because the core of the cognitive science program at Mississippi State is cognitive psychology, we selected the cognitive science program at Indiana University – Bloomington because it incorporates a strong cognitive psychology program and it is consistently ranked in the top 10 in the nation.

Indiana's curriculum requires six core courses, 16 hours from a list of approved courses, and four semesters registered for the colloquium series.
Their core courses along with their course descriptions are:

- Q520 (Mathematics and Logic in Cognitive Science) - The course will cover the mathematical backgrounds of contemporary work in cognitive science. It will include basic material on both the symbolic and connectionist approaches and machines, logics, networks, games, and probability.
- Q530 (Programming Methods in Cognitive Science) - Introduction to computer programming methods for artificial intelligence and computer simulation of cognitive models. Emphasis on the necessary data structures and their applications to cognitive science. Programming projects may be related to state-space search for problem solving and game playing, production systems, and cognitive modeling including memory and neural simulations.
- Q540 (Philosophical Foundations of the Cognitive and Information Sciences) - Introduction to the philosophical foundations of cognitive and information sciences. Causal issues: cognitive architecture, physical embodiment, neuroscience, networks, dynamic systems, etc. Semantic issues: meaning, interpretation, representation, information flow. The role of both in language, logic, reasoning, action, perception, learning, categorization and consciousness

- Q550 (Models in Cognitive Science) - An introduction to modeling in various areas of cognitive science. Computer simulation models of complex cognition. Models within artificial intelligence. Models based on neural mechanisms and networks. Formal and mathematical models in areas such as psychology, linguistics, and philosophy
- Q551 (The Brain and Cognition) - An introduction to neural mechanisms underlying complex cognition, and a survey of topics in neuroscience related to cognition.
- Q560 (Behavioral Methods in Cognitive Science) - Specific goals of this course include: an understanding of experimental design and the resources for future studies; an understanding of converging measures and programmatic research; discussion of current controversies in experimental design; and hands-on experience designing, conducting, and critiquing experiments.

The content of these six core courses maps directly onto the concepts in our proposed curriculum even if the content is organized into courses slightly differently.

- Our Research Methods (PSY 8513) and Research Skills (PSY 8683) courses cover research methods in psychology (PSY 8513) and methods specific to cognitive science (PSY 8703). These courses map onto the content of Q560 at Indiana.
- Our Advanced Cognitive Science (PSY 8703) course covers the multidisciplinary background of cognitive science similar to Q520 and Q540 at Indiana. The introductory modeling content of Q520 and Q540 is also contained in our two computational modeling courses (PSY 8723 and PSY 8773).
- The Q550 modeling course at Indiana maps onto the advanced modeling content of our PSY 8723 and 8773 courses. In additional the distributed nature of brain representations taught in Q551 at Indiana is contained in our distributed models course PSY 8773.
- The programming course of Q530 maps onto the programming content we teach as part of Research Skills (PSY 8683) and Advanced Research Skills (PSY 8693).
- To summarize, the comparison with Indiana core courses highlighted at least three areas (foundations of cognitive science, programming, and computational modeling) that our existing curriculum did not cover as extensively. These areas are addressed to a greater degree in our proposed curriculum.

Indiana requires 16 additional hours from a larger set of approved courses in cognitive science. This course list includes doctoral courses in many departments because Indiana's program consists of over 80 faculty across more than a dozen departments. Because we have a much smaller core faculty (4-5) with a few affiliated faculty who regularly participate in our weekly research seminar (3-4 additional faculty), we focus on Indiana's offerings in the cognitive psychology area of their program. These courses include the following with the course mapping to our courses explained in **bold**:

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As part of our self-evaluation we conducted a survey of our graduates. Given the relatively small size and age of the program, we have only had 7 graduates. We were able to get responses from all of these graduates (100%). We highlight the most significant responses to this questionnaire. First, we explained the difference between split-level and graduate-only courses and asked "One goal of our graduate courses is to provide an understanding of theoretical/computational cognitive mechanisms in a variety of domains. Which of the following do you think provides the best training opportunities for cognitive science graduate students?" For this question, 71% responded graduate-only courses would be better and the other 29% had no opinion. This response is consistent with our modification to include only 8000 level courses in our curriculum.

Most of our questions focused on the topic of the research and professional skills courses. In particular, we were interested in the topics that our graduates thought should be taught based on the professional experience they had acquired since graduating. 100% of our graduates reported that they were in positions that analyzed human data, and 86% responded that they used data collection and analysis techniques that required handling large amounts of data (e.g., neuroimaging, eye tracking). We provided a list of 15 topics that we were considering including in these skills courses, and the top ranked responses were as follows: 100% - applying for research grants, 86% - skills for publishing research, 86% - skills for automating data collection and analysis using programming, 86% - writing effective IRB protocols, 86% - managing research assistants, 86% - managing large research projects, 71% - programming for handling large data sets, 71% - conducting effective literature searches. We have used these responses in designing the research and professional skills courses that we are proposing as part of this curriculum modification.

We also provided the opportunity for graduates to give us some free form responses about courses or other content that they would like to see become a part of our curriculum. Some responses were:

- "I would like to see more focus placed on programming + data analysis in at least one major class"
- "Perhaps, some additional experience with grant writing or developing publications might have been helpful."
- "It's been a while but an emphasis on data science would be helpful. Encouraging additional statistics classes and communicating results to non-statisticians would also be very valuable."
- "Perhaps this is within the scope of the "research project management" topic, but research budget construction/planning would be useful.
- "I had a tremendous advantage in my professional career partly because of the opportunities I had to work on applied research projects. Few things are more valuable than having to simply solve real problems. I had to deal with everything from debugging software to finding ways to present complex data to naive audiences. To the extent that such opportunities are afforded your students, you will do them a great service. Additionally, the coaching I received on how to communicate in both written and oral forms has been invaluable. Being able to get to the "heart of the matter" even in informal work conversations is an indispensible skill."

To summarize, the results of our survey clearly show that the majority of our former graduates thought that an increase in 8000 level course work and research and professional skills would have increased their employability.

Required Question Responses

1. Will this program change meet local, state, regional, and national educational and cultural needs? If so, please describe.

   There is a clear need for more cognitive scientists. Cognitive science doctoral graduates are employed in both academic and non-academic positions. Non-academic positions include those in manufacturing (e.g., General Mills and Proctor & Gamble have cognitive science consultants in product design), computer software design (e.g., IBM employs cognitive scientists as usability analysts), human factors and ergonomics (e.g., Boeing uses cognitive scientists as consultants), marketing (e.g., one of our graduates is director of web analytics for American Girl), and

education (e.g., companies such as Carnegie Learning employ cognitive scientists to design curricula and intelligent tutoring systems).

As an example of the demand for cognitive scientists both regionally and nationally, a recent search on popular job websites in August 2014 found over 300 hits for ads that included "cognitive science" as a keyword including companies such as Panasonic, AT&T, Hitachi, Nuance, AutoTrader, Amazon, Bloomberg, Rosetta Stone, Blizzard, Pearson, Walmart, and Google. At least 40 of these positions were in the southeast region.

Our graduates are meeting local and regional needs. Many of our graduates are employed in the southeast with four being employed in Mississippi, one in Alabama, and one in Georgia. In addition, students and faculty in the cognitive science program engage in many interdepartmental collaborations including recent or ongoing collaborations with mechanical engineering, electrical engineering, architecture, computer science, and communication.

The proposed modifications to our curriculum are designed to provide our students with the skills and knowledge they will need to succeed in our doctoral program as well as in their research career. Therefore, these modifications will help to meet local, regional, and national needs.

2. Will this program change result in duplication in the System? If so, please describe.

   No. Mississippi State's cognitive science concentration is the only cognitive science Ph.D. program in the southeast region much less within the state. In addition, none of the courses being proposed are being taught at Mississippi State at this time.

3. Will this program change/advance student diversity within the discipline? If so, please describe.

   Many of our students come from minority groups or are international students. For example, currently 25% of our students are minority/international students. In the past six years, 28% of our enrolled students have been minority/international students. Cognitive Science is a STEM field (according to the Department of Education classification) and the proportion of doctoral degrees awarded in STEM fields to minorities is about 16% (2010 NSF data). Our program has a significant minority enrollment and therefore increasing the proportion of these students who complete their Ph.D. in our program will increase diversity in the field.

   The changes in our curriculum will provide our students with the skills and knowledge they will need to succeed in our doctoral program as well as in their research career. By better preparing our students, we expect that more of them will advance in the field and we expect that a greater proportion will be successful in completing the program.

4. Will this program change result in an increase in the potential placement of graduates in MS, the Southeast, and the U.S.? If so, please describe.

   Yes, as noted under question #1 above, many of our graduates have found positions in MS and the southeast. Better preparing our students can only increase the number of those successfully finding positions.

5. Will this program change result in an increase in the potential salaries of graduates in MS, the Southeast, and the U.S.? If so, please describe.

   The data from our survey of graduates clearly show that there are a number of topics in our proposed Research and Professional Skills courses that directly target skills needed in the careers our students have gone into. Increasing the preparation of our students by teaching these skills should increase the number of positions they are competitive for and lead to them competing for more lucrative positions.

4. Support

   A letter of support from the psychology department graduate curriculum committee is attached.

5. Proposed 4-Letter Abbreviation

   No change to the 4-letter abbreviation is needed.

6. Effective Date

   8/16/15 (Fall 2015 Semester)

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 **Department:** Kinesiology

Contact Person: Adam Love **Mail Stop:** 9575 **E-mail:** alove@colled.msstate.edu

Nature of Change: Modification **Date:** 10/10/2014

Program will be offered at: Starkville (Campus 1)

Current Degree Program Name: Bachelor of Science **Effective Date:** upon approval

Major: Kinesiology **Concentration:** Sport Studies

New Degree Program Name: Bachelor of Science

Major: Kinesiology **Concentration:** Sport Studies

Summary of Proposed Changes:

This proposal includes the addition of five new courses to the sport studies curriculum: SS 2103 Sport Careers & Practicum, SS 3503 Sport & Recreation Leadership, SS 3603 Program Planning in Sport & Recreation, SS 3703 Contemporary Issues in Intercollegiate Athletics, and SS 4503 Sport Promotion & Sales Management.

Department Head	10-10-14
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**

MISSISSIPPI STATE
UNIVERSITY™

Department of Kinesiology
www.kinesiology.msstate.edu

T - 662.325.2963
F - 662.325.4525
kineweb@colled.msstate.edu

216 McCarthy Gym
P.O. Box 6186
Mississippi State, MS 39762

October 10, 2014

To: Members of College of Education Box Council

Subject: Sport Studies Course Additions and Curricular Revisions

We wish to submit the following proposal for modifications to the bachelor's degree in kinesiology, concentration in sport studies. These modifications include the addition of five new courses to the sport studies curriculum: SS 2103 Sport Careers & Practicum, SS 3503 Sport & Recreation Leadership, SS 3603 Program Planning in Sport & Recreation, SS 3703 Contemporary Issues in Intercollegiate Athletics, and SS 4503 Sport Promotion & Sales Management. Course addition proposals for each of these courses have been submitted online via the UCCC system. Included in this proposal packet are the following items: (a) a degree program approval cover sheet, (b) the degree program modification proposal form outlined in the UCCC handbook, (c) a letter of support from the sport studies faculty in the Department of Kinesiology, and (d) letters from external reviewers.

Thank you for your consideration of this proposal.

Sincerely,

Adam Love, Ph.D.
Associate Professor
Department of Kinesiology
E-Mail: alove@colled.msstate.edu

XI. DEGREE PROGRAM MODIFICATION

1. CATALOG DESCRIPTION

There will be no change to the catalog description.

2. CURRICULUM OUTLINE

CURRENT Degree Description	PROPOSED Degree Description
Degree: Bachelor of Science Major: Kinesiology Concentration: Sport Studies	Same as current
The Department of Kinesiology offers four undergraduate concentrations: Sport Pedagogy (SPPE), Health Fitness Studies (HFS), Clinical Exercise Physiology (CLEP), and Sport Studies (SS). Community college transfer hours not to exceed 62 semester hours may be applied to the Kinesiology degree program. All concentrations require the specified course requirements cited within the General Education and major core listings below. Specified area content courses vary among the four concentrations and are listed following the core section. Pre-Occupational Therapy and Pre-Physical Therapy curricula have different core and program requirements. Students electing to pursue Pre-OT or Pre-PT should consult their advisor.	Same as current
The Sport Studies concentration provides students with knowledge and skills necessary for careers in the sport industry. A concentration in Sport Studies helps prepare students to work in such fields as sport marketing & promotions, sporting event and/or facility management & operations, sport communication & media relations, and other administrative areas at the professional, collegiate, and recreational levels of the sport business industry. The program seeks to combine classroom education with hands-on experience, as all students will complete an internship in the sport industry prior to graduation. Students choosing a concentration in Sport Studies choose either the Business or Communication cognate field.	Same as current

CURRENT CURRICULUM OUTLINE	Required Hours	**PROPOSED CURRICULUM OUTLINE**	Required Hours
English (Ex: EN 1103 English Comp I): EN 1103 English Comp I OR EN 1163 Accelerated Comp I EN 1113 English Comp II OR EN 1173 Accelerated Comp II	6	**English** (Ex: EN 1103 English Comp I): EN 1103 English Comp I OR EN 1163 Accelerated Comp I EN 1113 English Comp II OR EN 1173 Accelerated Comp II	6
Fine Arts (General Education):	3	**Fine Arts** (General Education):	3
Natural Sciences (2 labs required from Gen Ed): BIO 1004 Anatomy & Physiology	10	**Natural Sciences** (2 labs required from Gen Ed): BIO 1004 Anatomy & Physiology	10
Math (General Education): MA 1313 College Algebra	6	**Math** (General Education): MA 1313 College Algebra	6

MA 1613 Calculus for Business and Life		MA 1613 Calculus for Business and Life	
Humanities (General Education):	6	**Humanities** (General Education):	6
Social/Behavioral Sciences (Gen Ed): EC 2113 Prin of Macroeconomics SO 1003 Intro to Sociology	6	**Social/Behavioral Sciences** (Gen Ed): EC 2113 Prin of Macroeconomics SO 1003 Intro to Sociology	6
Core Courses CO 1003 Fund. of Public Speaking TKT 1273 Microcomputers in Ed. SS 2003 Foundations of Sport Industry SS 3103 Sport Sponsorship SS 3203 Sport Law SS 4103 Ethics in Sport Management SS 4203 Funding of Sport SS 4303 Globalization and Sport SS 4803 Seminar in Sport Studies *SO 4333 Sociology of Sport* SS 4396 Sport Industry Internship	36	**Core Courses** CO 1003 Fund. of Public Speaking TKT 1273 Microcomputers in Ed. SS 2003 Foundations of Sport Industry **SS 2103 Sport Careers & Practicum** SS 3103 Sport Sponsorship SS 3203 Sport Law SS 4103 Ethics in Sport Management SS 4203 Funding of Sport SS 4303 Globalization and Sport SS 4803 Seminar in Sport Studies SS 4396 Sport Industry Internship	36
Core Electives Choose *five* of the following: SS 3403 Facility & Event Mgmt in Sport SS 3303 Communication Mgmt in Sport KI 4990 Special Topics Course (with approval) KI 4000 Directed Individual Study *KI 2213 Emergency Health Care* PE 3163 Sport Psychology PE 3313 Sport Physiology PE 4223 Sport Biomechanics	*15*	**Core Electives** Choose **six** of the following: SS 3403 Facility & Event Mgmt in Sport SS 3303 Communication Mgmt in Sport **SS 4403 Gender and Sport** **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 & Sales Mgt** **SO 4333 Sociology of Sport** KI 4990 Special Topics Course (with approval) KI 4000 Directed Individual Study PE 3163 Sport Psychology PE 3313 Sport Physiology PE 4223 Sport Biomechanics	**18**
Cognate Area + Free Electives Choose one of the following cognates to complete the concentration requirements: Business Cognate (25 hours) ACC 2013 Financial Accounting ACC 2023 Managerial Accounting ST 2113 Introduction to Statistics EC 2123 Principles of Microeconomics MKT 3013 Principles of Marketing FIN 3113 Financial Systems FIN 3123 Financial Management MGT 3114 Prin of Mgmt and Production *Free Electives (11 hours)*	*36*	**Cognate Area + Free Electives** Choose one of the following cognates to complete the concentration requirements: Business Cognate (25 hours) ACC 2013 Financial Accounting ACC 2023 Managerial Accounting ST 2113 Introduction to Statistics EC 2123 Principles of Microeconomics MKT 3013 Principles of Marketing FIN 3113 Financial Systems FIN 3123 Financial Management MGT 3114 Prin of Mgmt and Production **Free Electives (8 hours)**	**33**

Communication Cognate (27 hours) CO 1223 Introduction to Comm Theory CO 1403 Introduction to the Mass Media CO 2333 Television Production CO 2413 Introduction to News Writing CO 3313 News Writing for Elec Media CO 3423 Feature Writing CO 3713 Digital Communication CO 3803 Principles of Public Relations CO 3823 Public Relations Copy & Layout *Free Electives (9 hours)*		Communication Cognate (27 hours) CO 1223 Introduction to Comm Theory CO 1403 Introduction to the Mass Media CO 2333 Television Production CO 2413 Introduction to News Writing CO 3313 News Writing for Elec Media CO 3423 Feature Writing CO 3713 Digital Communication CO 3803 Principles of Public Relations CO 3823 Public Relations Copy & Layout **Free Electives (6 hours)**	
Total Hours	124	Total Hours	124

3. JUSTIFICATION AND STUDENT LEARNING OUTCOMES

The sport studies curriculum, as it is currently constituted, was developed in 2008 (with the exception of one course that was altered in the curriculum in 2012). In the six years since the curriculum was developed, there has been substantial growth in the sport studies program and the Department of Kinesiology. In fall 2008, the enrollment in the sport studies concentration (known as sport communication at the time), was 74 students. As of the 10th day of the fall 2014 semester, the enrollment in the sport studies concentration was 176 students – growth of 238% in just six years. Further, in 2008 there were only two faculty members in the Department of Kinesiology whose primary area of teaching was in the sport studies concentration. There are now four faculty members in the department whose primary area of teaching is sport studies. The curricular modifications outlined in this proposal result from the need to serve a growing number of students in the sport studies program and the ability to serve those students due to an increase in faculty members.

Each of the five newly-proposed courses (SS 2103 Sport Careers & Practicum, SS 3503 Sport & Recreational Leadership, SS 3603 Program Planning in Sport & Recreation, SS 3703 Contemporary Issues in Intercollegiate Athletics, and SS 4503 Sport Promotion & Sales Management), addresses areas included in the Commission on Sport Management Accreditation guidelines (available at cosmaweb.org). One of these courses, SS 2103, will be included as a core course, as it will play an important role in educating students about the scope of careers that exist in the sport industry and preparing them for their internship experience. The other four newly-proposed courses will be included as core electives, as will SS 4403 and SO 4333 (both are existing courses). The expansion of courses offered in the "core electives" section of the curriculum will enhance students' education by allowing them greater opportunity to select the courses that best align with their academic and professional interests. Coinciding with the expansion of courses in the core electives, the number of core elective hours required has been increased from 15 to 18 (in turn, the number of "free electives" in the program decrease to 8 hours for students in the business cognate and 6 hours for students in the communication cognate). Replacing free elective hours with core elective hours will ensure that students take more relevant coursework within the sport studies program (as opposed to free elective coursework, which may have less direct relevance to the field of sport studies).

In developing the curricular modifications outlined in this proposal, we reviewed leading academic programs in the field of sport studies and invited external reviewers to assess our proposal. Overall, the findings of this review demonstrate that our proposed curricular

modifications are consistent with what is being done at leading programs in the field. Specifically, several letters from external reviewers are included at the end of this proposal.

The program modifications outlined in this proposal will not result in any duplication within the system; they simply enhance the ability of the current sport studies concentration to serve students. There is reason to expect that the program changes may positively impact diversity within the program; the additional experience and knowledge gained from the newly-proposed courses in the curriculum may help better prepare all students for their future careers, and this is particularly important for students who enter the program with little previous background in the field. Given that the curricular modifications are aimed at helping students gain additional practical experience and select coursework that best aligns with their academic and professional interests, there is also reason to expect that these program changes may increase the potential placement of graduates within the region/nation as well as increase potential salaries by helping students become better prepared for more desirable positions. Overall, the modifications outlined in this proposal will help the sport studies program better prepare students for careers in the sport industry and/or for postgraduate study in the field. The modifications are necessary to help the sport studies program better serve a growing number of students.

4. SUPPORT

A letter of support from the head of the Division of Sport Studies, Dr. Brad Vickers, signed by members of the Sport Studies faculty is included in this proposal. We also include several letters from external reviewers at the end of the proposal.

5. PROPOSED 4-LETTER ABBREVIATION

The abbreviation currently used to refer to the sport studies concentration is SS. This will not change.

6. EFFECTIVE DATE

The changes will be effective in the academic term following approval.

DEPARTMENT OF KINESIOLOGY

Mississippi State UNIVERSITY

September 2, 2014

Subject: Sport Studies Curricular Revisions and Course Additions

The faculty members of the Division of Sport Studies in the Department of Kinesiology have reviewed the sport studies curricular revisions and course additions outlined in this proposal. These modifications include the creation of five new courses: SS 2103 Sport Careers & Practicum, SS 3503 Sport & Recreation Leadership, SS 3603 Program Planning in Sport & Recreation, SS 3703 Contemporary Issues in Intercollegiate Athletics, and SS 4503 Sport Promotion & Sales Management. We approve of these additions and the related curricular revisions, as this will help strengthen the sport studies concentration and better serve our students.

Debby Funderburk Adam Knight

Adam Love Alan Morse

Adam Pfleegor Matthew Rye

Holly Wiley Glen Young

Sincerely,

Brad Vickers, Ph.D.
Associate Professor
Division Coordinator, Sport Studies
Department of Kinesiology
Mississippi State University

UNIVERSITY OF Cincinnati

College of Education, Criminal Justice, and Human Services
Sport Administration Program
PO Box 210068
Cincinnati, OH 45221-0068
Phone (513) 556-1331
Fax (513) 556-3898

September 20, 2014

To Whom It May Concern:

I was asked by Dr. Adam Love to review the curricular changes to the Bachelor of Science in Kinesiology with a concentration in Sport Studies at Mississippi State University. As the program coordinator for the Sport Administration Program at the University of Cincinnati, I have both developed curriculum for our program to meet student and industry demands. Evaluating the changes they proposed, it is clear they have the students' preparation for success in the sport industry in mind. These courses are also aligned well with the Commission on Sport Management Accreditation guidelines. Ultimately, these curricular changes will bring value to the students' knowledge and ability to develop successful careers in the sport industry.

Sincerely,

Thomas J. Aicher
Sport Administration Program Coordinator
University of Cincinnati

UNIVERSITY OF
ARKANSAS

College of Education and Health Professions
Department of Health, Human Performance, and Recreation
HPER Building • Fayetteville, Arkansas 72701 • (479) 575-2857 • FAX (479) 575-5778

October 6, 2014

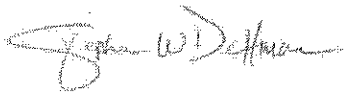
Curricular Committee
Mississippi State University
Starkville, MS

Dear Committee Members:

Please accept this letter of support for the proposed curricular revisions for the undergraduate degree in Sport Studies at Mississippi State University. I have reviewed the proposed changes and find they are consistent with the trend in sport management education. In particular, the emphasis on field experiences (internship and practicum) and a course in sales management will serve MSU students well as they enter a crowded, and competitive marketplace.

As a past member of the North American Society for Sport Management Executive Council, I had the opportunity to engage in numerous conversations regarding the direction and trend in sport management pedagogy and find the curricular revision proposal submitted by Sport Studies to be appropriate and progressive.

Sincerely,



Stephen W. Dittmore, PhD
Associate Professor
Coordinator, Recreation and Sport Management Program
University of Arkansas

SYRACUSE UNIVERSITY

DEPARTMENT OF SPORT MANAGEMENT
DAVID B. FALK COLLEGE OF SPORT AND HUMAN DYNAMICS

October 6, 2014

Dear Curriculum Committee:

I have been asked to review potential curricular changes to the undergraduate degree in Sports Studies at Mississippi State University, utilizing my experience in the industry and in leading sport management programs over the past 12+ years. I'm additional relying upon my previous experience as curriculum committee member and chair and department and college levels at two universities.

Upon completion of my review, I am confident the additions to the curriculum are not only relevant, but also necessary to providing students with knowledge expected in the field of sport management. The proposed curricular revisions are well justified and are consistent with most sport management programs. Additionally, the proposed revisions meet COSMA standards if the program were to seek accreditation in the future. Lastly, the proposed elective options provide more flexibility for students, which is common practice, and typically encouraged in sport management curriculum. I fully support and recommended the proposed revisions be included into the Sport Studies curriculum at Mississippi State.

Please contact me should you have any questions regarding this review. I can be reached at (315) 443-0364 or cmcevoy@syr.edu.

Regards,

Dr. Chad D. McEvoy
Editor, *Case Studies in Sport Management*
President-Elect, Sport Marketing Association
Professor of Sport Management and Graduate Program Director
David B. Falk College of Sport and Human Dynamics
Syracuse University

UNC
COLLEGE OF
ARTS & SCIENCES

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL
DEPARTMENT OF EXERCISE AND SPORT SCIENCE

October 7, 2014

To whom it may concern,

Recently I have reviewed the proposed curriculum revisions for the undergraduate Sport Studies program within Mississippi State University's Department of Kinesiology. The proposed changes are well thought out and cover important topic areas within our discipline. Courses covering issues related to leadership in sport, sport sales, and intercollegiate athletics are certainly critical components for many students aspiring to careers in the sport industry. In addition, many of the proposed curricular changes would help Mississippi State meet the standards set by our accrediting body, the Commission on Sport Management Accreditation (COSMA). Having served on sport management curriculum development committees and discussion groups at both Illinois State University and the University of North Carolina, I have spent considerable time examining the issues of sport management curriculum. As such, I fully endorse the proposed changes at Mississippi State.

Sincerely,

Nels Popp

Nels Popp
Assistant Professor – Sport Management
University of North Carolina

OHIO
UNIVERSITY

Dr. Adam Love, Ph.D.
Associate Professor & Graduate Coordinator
Department of Kinesiology
Mississippi State University

October 7, 2014

Dr. Love:

It is my pleasure to write a letter of endorsement for the proposed Degree Program Modification for the Bachelor of Science degree, concentration of Sport Studies, in the Department of Kinesiology and College of Education at Mississippi State University. As a former tenure track faculty member in Sport Studies at Mississippi State University, I can say without reservation that this proposal is needed and in line with other top undergraduate sport management programs in the country including my current employer, Ohio University. Ohio University is where sport management started as a recognized curriculum in 1966, and we recently revised our undergraduate curriculum to meet COSMA standards.

This proposal meets and/or exceeds those requirements and I am pleased that MSU is moving towards a serious undergraduate sports management degree that will benefit students for years to come. Too often we have has undergraduate sports management/science degrees in name only and masking them as additional Kinesiology degrees. Kinesiology is a fine major but misnaming a degree program ostensibly to gain enrollment was a poor decision by many schools as it was not effectively preparing students for sports management careers or graduate school.

I see this as a strong step forward for MSU and Sport Studies overall. This program will bring in passionate students and continue to increase enrollment as evidenced already by past changes. This is a growing major worldwide and it is important to be ahead of the curve and this degree program does that and continues to move Mississippi State toward having the premiere Sports Management program in the Mid-South. I urge all decision makers to accept this proposal without delay. You will not regret making these needed changes and the positive effects of this change will be felt for years to come. If there is anything I can add to the discussion beyond this letter, please do not hesitate to contact me at ridpath@ohio.edu.

Regards,

B. David Ridpath, Ed.D.
Associate Professor
Kahandas Nandola Professor of Sports Management
Department of Sports Administration
College of Business

OLD DOMINION
UNIVERSITY
DEPARTMENT OF HUMAN MOVEMENT SCIENCES
STUDENT RECREATION CENTER - ROOM 2007
NORFOLK, VIRGINIA 23529-0196
PHONE: (757) 683-4995 • FAX: (757) 683-4270

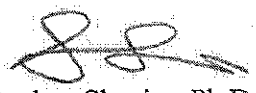
10/2/14

To Whom It May Concern

My name is Stephen Shapiro and I am an Associate Professor of Sport Management at Old Dominion University. I am also a member of the ODU College of Education Curriculum Committee, and I am in charge if curricular revisions for the Department of Human Movement Sciences. I was asked to review potential curricular changes to the undergraduate degree in Sports Studies at Mississippi State University.

After review of the suggested changes, it appears the courses being added to the curriculum cover relevant topic areas in the field of sport management, and the curricular revisions seem justified and are consistent with what is being done in sport management education. Additionally, the new courses being offered align with COSMA standards, which help the program with future accreditation. Finally, the changes to elective options provide more flexibility for students in the program, which is common practice in sport management curriculum. I fully support the recommended changes.

Sincerely,



Stephen Shapiro, Ph.D.
Associate Professor of Sport Management
Old Dominion University

School of Sport and Exercise Science
501 20th Street
Campus Box 39
Greeley, CO 80639

10/6/2014

Dr. Alan L. Morse
Co-Director, Sport Administration & Sport Studies Programs
Department of Kinesiology, Mississippi State University
226 McCarthy Gymnasium
Mississippi State, MS 39762

Attn: Curriculum Committee

I was invited to write this letter in relation to curricular revisions to the undergraduate degree in Sport Studies at Mississippi State University. These comments are based on my position as a tenured Full Professor with 27 years of service (32 total in higher education) and 12 years as the Director of our School of Sport & Exercise Science here at the University of Northern Colorado, a Carnegie Comprehensive Doctoral Research institution. Furthermore, I am a Research Fellow of the North American Society for Sport Management.

The curricular revisions seem justified based on the accepted national standards in the field of sport management, other programs across the nation and the guidelines of the Commission on Sport Management Accreditation. It is also supported by the growth in MSU faculty in sport studies. The modifications also support the additional number of students in the sport studies program providing increased specialization and additional elective opportunities.

The newly-proposed courses including Sport Careers & Practicum, Sport & Recreational Leadership, Program Planning in Sport & Recreation, Contemporary Issues in Intercollegiate Athletics, and Sport Promotion & Sales Management, broaden the options for current students and better prepare them for careers in the field. Overall, the modifications help the sport studies students be more competitive in the market and better qualified for graduate school.

Sincerely,

David K. Stotlar, Ed. D.
Professor,
School of Sport & Exercise Science
david.stotlar@unco.edu 970-351-1722

UNIVERSITY OF SOUTH CAROLINA
COLLEGE OF HOSPITALITY, RETAIL, AND SPORT MANAGEMENT
Department of Sport & Entertainment Management

Adam Love, Ph.D.
Associate Professor & Graduate Coordinator
Department of Kinesiology
Mississippi State University

Dear Dr. Love,

As per your request, I have evaluated the proposed curricular revisions for the Sport Studies program at Mississippi State University (MSU). I have served as an external reviewer for numerous universities and programs at research institutions through my service with the Commission on Sport Management Accreditation (COSMA) and prior to that through my work with the Sport Management Program Review Council (SMPRC). Additionally I have been administratively involved with sport management curricular development during my tenure as Associate Dean and Chair at the University of South Carolina and as Associate Dean at the University of Miami, as well as during my tenure as a faculty member at MSU. Therefore I feel very comfortable and familiar with the expectations placed on an external reviewer as well as with the expectations for a vibrant, dynamic and successful sport management curriculum. Through the examination process using materials provided, I have reached the following conclusions:

The overall concepts for the changes proposed for the sport studies program are sound. Each of the moves described helps ensure that the program is in compliance with the COSMA content requirements and guidelines and would place the program in position to seek accreditation when the faculty and administration feel it is the appropriate time to do so. Programs that seek accreditation, place themselves in an elite category within the sport management academy. The program and department should be commended for taking this initiative.

Specifically, the development and insertion of SS 2103 - Sport Careers & Practicum, is an important and innovative move that will help MSU students as they begin the professional careers. This step alone will help MSU students standout in a crowded market place through the additional experience and training they will receive when compared to their competition. Practica and internship experiences are viewed by the industry as one of the most important, if not the most important experience(s) that students can have

UNIVERSITY OF
SOUTH CAROLINA
COLLEGE OF HOSPITALITY, RETAIL, AND SPORT MANAGEMENT
Department of Sport & Entertainment Management

while preparing to enter the sport industry. The movement of SO 4333 - Sport Sociology, from a required course to a core elective is an appropriate change that will still allow students to enroll in this class if desired.

The generation of new elective courses, SS 4403, 3503, 3603, 3703 & 4503 will serve to enrich students preparation for entering the workforce as well as their overall insight into the complexities of the sport industry. Each of these courses offers a specific and needed content area. In addition to preparing students for careers upon graduation, theses course will be extremely insightful for students choosing to pursue graduate degrees. While the proposed changes reduce the number of free electives students are able to take, students are still capable of intellectual exploration with a reasonable block of 8 hours of electives.

I commend the Sport Studies faculty for proposing the curricular changes and wholeheartedly support this proposal.

If you require further information, please do not hesitate to contact me.

Sincerely yours,

Andy Gillentine

Andy Gillentine, Ph.D.
Associate Dean & Professor
College of Hospitality, Retail & Sport Management

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 or School: Engineering **Department:** Dean of Engineering/CAVS

Contact Person: Roger L. King **Phone:** 52298 **E-mail:** rking@cavs.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** 08/01/14 **Effective Date:** 08/01/15

Current Degree Program Name: Master of Science

Major: Computational Engineering **Concentration:**

Summary of Proposed Changes:

Offer the program via distance learning.

Approved:	***Date:*** 8/27/14
Department Head	
Thomas D. White	11/18/14
Chair, College or School Curriculum Committee	
for M. Keith Thompson	11/25/14
Dean of College or School	
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council (if applicable)	
Chair, Deans Council	

Degree Approval for Distance Learning (Existing Program)
M.S. in Computational Engineering

1. CATALOG DESCRIPTION

The Computational Engineering graduate program is interdisciplinary, with faculty drawn from the academic departments of the College of Engineering and the College of Arts and Sciences, as well as the research faculty of the HPC^2. Programs of study and research leading to both the Master of Science degree and the Doctor of Philosophy degree are available. There is an increased demand by industry, academia, and government for scientists and engineers with a better knowledge of the skills necessary to create new technologies and improve upon existing ones through simulation tools. Such programs come with curricula covering a large range of subjects, so that they can produce scientists and engineers with broad backgrounds and viewpoints. These scientists and engineers can then be expected to understand the basic approaches to solving analytical problems and also using mathematical and computational tools required to arrive at solutions. The program is open to students with undergraduate degrees in engineering, computer science, mathematics, or a physical science. Research assistantships are available through research projects in the HPC^2.

Admission Criteria
To be admitted, the student must meet the admission requirements of the Office of the Graduate School, receive a positive recommendation from the Computational Engineering screening committee, and be accepted as a student by a member of the Computational Engineering graduate faculty. International students must have scored at least 550 PBT (213 CBT or 79 iBT) on the Test of English as a Foreign Language (TOEFL) or 6.5 on the International English Language Testing System (IELTS). Students with a degree from a program that is not EAC/ABET accredited must have a satisfactory performance on the GRE.

In addition, highly qualified undergraduate students, with a minimum equivalent GPA of 3.50/4.00 on the last 60 credit hours of undergraduate courses, or a first class with distinction degree classification for students from institutions where no GPA is reported, or a satisfactory performance on the GRE for students from a non-ABET-accredited program, can be directly admitted to the Ph.D. program.

Provisional Admission—Because of the interdisciplinary nature of the Computational Engineering program, virtually all students are required to take some prerequisite courses. Nevertheless, all students admitted to the program are granted regular admission. Provisional admission is not approved.

Program of Study
The specific requirements for the degrees are governed by the requirements of the Office of the Graduate School, the College of Engineering, and by the student's graduate committee. The committee must include at least one Computational Engineering faculty member from each of the following areas: 1) a Computational Engineering application area, 2) high-performance computing, and 3) numerical mathematics. The graduate committee will ensure that the student's program of study adequately addresses each of the three primary cross-disciplinary areas (an application area, high-performance computing, and numerical mathematics), and students are

encouraged to include one or more courses in scientific visualization or graphics. The composition of the graduate committee and the student's program of study must be approved by the Computational Engineering Graduate Coordinator.

Academic Performance
Continued enrollment in the graduate program in Computational Engineering is dependent upon satisfactory performance in the courses and satisfactory progress toward completion of the degree. To achieve satisfactory performance, a student must

1. maintain a B average on:
    a) all undergraduate prerequisite courses;
    b) all graduate courses completed after admission to the program;
    c) all graduate courses included on the student's program of study;
2. have no more than one grade less than C;
3. have a major advisor and a supervisory committee (after the first two semesters of enrollment).

Should a student's cumulative grade point average (in any of the three categories above) be less than 3.00 at the end of a term, the student will be placed on "probation" and will be given one semester to earn a cumulative grade point average of 3.00 or greater. If at the end of the probationary term the student's cumulative grade point average (in any of the three categories above) is less than 3.00, the student's program of study will be terminated immediately. If the student enrolls in the summer term, it will count as one term.

Should a student earn a second grade less than a C, the student's program of study will be terminated immediately. Should a student who is beyond his/her second period of study not have a major advisor and supervisory committee, the student will be placed on probation and given one semester to form a committee. Should the student not be able to form a committee, his/her program of study will be terminated. A student may appeal termination of his/her study to the Computational Engineering Supervisory Committee.

Completion Requirements (M.S.)
Both a thesis (research) option and a non-thesis (project) option are offered. For the research option, successful completion of at least 24 credit hours of graduate coursework (at least 12 hours at the 8000 level) plus submission and defense of a 6-hour research thesis are required.

For the non-thesis degree option, successful completion of at least 33 credit hours of graduate coursework and a project are required. No more than 3 hours of credit for the project can be applied toward the required 33 hours. At least 15 hours of coursework on the program of study must be at the 8000 or higher level.

2. CURRICULUM OUTLINE

No specific courses are required. Each student's Program of Study is developed in conjunction with the student's major professor and graduate committee and designed to fulfill the degree requirements in three major areas: 1) a Computational Engineering application area; 2) high performance computing; and 3) numerical mathematics. For the thesis option, a final oral thesis

defense is required. For the non-thesis option, a final oral comprehensive examination is required. All requirements for the distance-learning program are identical to those for Campus 1 students. The student's physical presence on the Starkville campus may be encouraged for specific activities (e.g., thesis defense or comprehensive examination), however it is not required. Oral exams via teleconference or WebEx have been used successfully for a few Campus 1 students in CME and for many Campus 5 students in other distance programs in the Bagley College of Engineering. Graduate courses in several Computational Engineering application areas, high performance computing, and numerical mathematics are already approved for distance delivery. Campus 5 students will be able to complete their Programs of Study without any delays or undue burdens.

3. JUSTIFICATION FOR DISTANCE LEARNING OFFERING

IHL has as one of its strategic initiatives that Universities in the state of Mississippi produce "more graduates of even higher quality." With the acceptance of high performance computing as a third mode of scientific investigation, computational simulations now join theoretical analysis and physical experimentation as the newest tool for discovering new knowledge. This development has created the need for degree programs, such as Computational Engineering, to be delivered via distance to meet the nation's demand for scientists and engineers with the broad understanding necessary to develop and apply these new investigative tools to scientific research and engineering design. One of the key areas in which this new knowledge and the Computational Engineering degree program are needed is in the nation's national laboratories (e.g., DoD, NASA, and DOE) where high-performance-computing assets are readily available.

ACADEMIC MISCONDUCT

All distance students must have proctors (approved by the home department of the Instructor of Record), who will administer exams for each distance-learning course. All exams will be new or substantially revised each time a course is offered. All research will be conducted at facilities that have been certified by MSU. A Distance Student Certification of Off-Campus/Non-MSU Research Facility form will be processed for each student enrolled, as necessary.

TARGET AUDIENCE

The distance version of the CME program is envisioned as a site-specific distance degree program that can be delivered to the nation's national laboratories (e.g., ERDC, MSFC, and ORNL). It is our intent to limit acceptance of students into the program from just this caliber of government laboratory. By making CME a site-specific degree program for national laboratories, we will ensure that distance students will have access to high-performance computing assets for classroom projects and thesis/dissertation research. Also, since the national laboratories have educational offices, there will be on-site assets for delivery of course content and a professional staff for oversight of classroom functions, such as exam proctoring and local supervision of course projects.

4. LEARNING OUTCOMES

These are the same learning outcomes as for the Campus 1 students:

1. Students will demonstrate mastery of relevant body of knowledge in Computational Engineering
2a. (Thesis option) Students will demonstrate the ability to conduct and communicate research that contributes to the profession
2b. (Non-thesis option) Students will demonstrate the ability to design and complete a project involving high-performance computing
3. Graduates will have initiated a professional career

5. PROPOSAL SUBMISSION

This program proposal is accompanied by a distance-approval proposal for CME 8000, Research/Thesis.

6. EFFECTIVE DATE

August 2015

7. CONTACT PERSON

Roger L. King, Director & Endowed Chair and Giles Distinguished Professor
CAVS
Box 9618
Phone: 662-325-2298
Email: rking@cavs.msstate.edu

8. MASTER SCHEDULE

Inclusion in the Master Schedule expected effective Fall 2015.

9. SUPPORT

Enclosed are letters of support from the Department of Mathematics and Statistics and the Department of Computer Science and Engineering. Additionally, a letter of support signed by the Level 1 CME Graduate Faculty is enclosed. The letters attest that there are sufficient courses offered via distance to allow students to complete their Programs of Study.
Library resources in existence for the Campus 1 program are adequate, and will be accessible to Campus 5 students. Similar arrangements are already in place for other distance programs in the Bagley College of Engineering.

APPENDIX 8: DECLARATION OF INTENT TO OFFER A DEGREE PROGRAM BY DISTANCE LEARNING

Institution: Mississippi State University

Date of Initial Program Approval:	Date of Implementation:	Cost of Implementation:
Fall 1990 (on-campus)	Fall 2015	Minimal

Program Title as Appears on Academic Program Inventory, Diploma, and Transcript:	Six Digit CIP Code:
Computational Engineering	30.0301

Degree(s) to be Awarded:	Credit Hour Requirements:
Master of Science	30 (thesis) or 33 (non-thesis) beyond B.S.

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?	Yes
Will this program require separate admission from those offered on-campus?	Yes
Will this program have different fees or tuition rates from those offered on-campus?	No*

Responsible Academic Unit(s):	Institutional Contact:
Dean of Engineering/CAVS	Roger L. King, CAVS Director

Number of Students Expected to Enroll in First Six Years:		Number of Graduates Expected in First Six Years:	
Year One	6	Year One	0
Year Two	6	Year Two	0
Year Three	8	Year Three	2
Year Four	8	Year Four	4
Year Five	10	Year Five	6
Year Six	10	Year Six	8
Total	48	Total	20**

Program Summary:

*Tuition rates are the same, distance fees may be assessed

**These are full-time employees and part-time students, therefore the graduation rates will not be as large as those for full-time students

Institutional Executive Officer Signature _____ Date _____

MISSISSIPPI STATE
UNIVERSITY

DEPARTMENT OF MATHEMATICS AND STATISTICS

January 28, 2013

Rita A. Burrell
Manager, Graduate and Distance Education
Secretary, Continuing Professional Development Division, ASEE
Standing Chair, University Committee, GEM Executive Committee
Bagley College of Engineering

Dear Ms. Burrell,

The Department of Mathematics and Statistics regularly offers courses for MA 6313 Numerical Analysis I, MA 6323 Numerical Analysis II, MA 8203 Foundations of Applied Mathematics I, MA 8213 Foundations of Applied Mathematics II, and MA 8463 Numerical Linear Algebra. The Bagley College of Engineering has requested that these courses be offered as distance courses for students who are pursuing graduate degrees in engineering. MA 6313, MA 6323, MA 8203, and MA 8213 have already been approved by UCCC to be offered as distance courses. We are in the process of proposing MA 8463 for approval through UCCC for distance learning as well.

The Department of Mathematics and Statistics is highly supportive of offering these courses by distance learning for students in the Bagley College of Engineering, as long as we can offer the distance learning courses at the same time as our face-to-face courses. We would be happy to assist in any way appropriate.

Sincerely yours,

Mohsen Razzaghi
Department Head

P.O. Box MA, 410 Allen Hall, MS State, MS 39762
www.msstate.edu/dept/math • office@math.msstate.edu • Phone: (662) 325-3414 • Fax: (662) 325-0005

MISSISSIPPI STATE
UNIVERSITY

Computer Science and Engineering

December 3, 2012

Dr. Roger King, Director
Center for Advanced Vehicular Systems
Mississippi State University

Dear Dr. King,

The Department of Computer Science and Engineering supports the attached Distance Education Plan for the Computational Engineering MS and PhD degrees. Specifically, the CSE department is committed to making available distance offerings of the following CSE graduate courses on a regular rotation for CME distance students who satisfy the course prerequisites:

CSE 6163 Design of Parallel Algorithms
CSE 6833 Introduction to Algorithms
CSE 6753 Foundations in Computation
CSE 8833 Algorithms
CSE 8843 Sequential and Parallel Algorithms

These CSE courses have already been approved by UCCC for distance offering and several have already been taught by distance to the department's graduate cohort at the Engineering Research and Design Center in Vicksburg, MS.

The department understands that these offerings will have the following characteristics:

- The courses will be delivered synchronously to the distance students in conjunction with on-campus delivery of the courses
- The students will be from facilities where there are professional staff available for proctoring exams and local supervision of course projects
- Where possible, cohorts of students who can take the courses together at a facility should be sought to reduce the number of distance offerings of these courses to multiple simultaneous sites.

JAMES WORTH BAGLEY COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY

665 George Perry Street • 300 Butler Hall • Post Office Box 9637 • Mississippi State, MS 39762
dreese@cse.msstate.edu • 662.325.2756 Phone • 662.325.8997 Fax • www.cse.msstate.edu

The CSE Department anticipates that CSE faculty will be included on committees for these students where appropriate and that these collaborations on the distance education programs may help to facilitate research collaborations in the future.

Sincerely,

Donna S Reese

Dr. Donna Reese
Professor and Department Head

Distance Education Plan for Computational Engineering (MS and PhD)

IHL has as one of its Strategic Initiatives that we have "More Graduates of Even Higher Quality." To help achieve this goal it is proposed to offer both the Master of Science and Doctoral degrees in Computational Engineering (CME) via distance. With the acceptance of high performance computing as a third mode of scientific investigation, computational simulation now joins theoretical analysis and physical experimentation as tools for discovering new knowledge. This development has created the need for new curricula to meet the nation's demand for scientists and engineers with the broad understanding necessary to develop and apply these new investigative tools to scientific research and engineering design. One of the key areas in which this new knowledge and educational degree programs is needed is in the nation's national laboratories (e.g., DoD and DOE) where high performance computing assets are readily available.

The specific requirements for the degrees are governed by the requirements of the Office of the Graduate School, the Bagley College of Engineering, and by the student's graduate committee. However, as an interdisciplinary degree program, the student's program of study must address three primary core areas - an application domain, high-performance computing, and numerical mathematics. To enable CME to be approved as a distance degree by the university it must be demonstrated that each student will have adequate access to distance courses to meet the program's requirements. Therefore, it is requested that the Department of Computer Science and Engineering make available the following five courses for distance CME students via a formalized course rotation scheme:

CSE 6163 Design of Parallel Algorithms
CSE 6833 Introduction to Algorithms
CSE 6753 Foundations in Computation
CSE 8833 Algorithms
CSE 8843 Sequential and Parallel Algorithms

These five courses offered in a rotation scheme should enable distance students to satisfy their high-performance computing degree requirement within a reasonable timeframe.

As stated previously, this is envisioned as a site specific degree program that can be delivered to the nation's national laboratories and it is the intent that we limit acceptance of students into the program from just these facilities. At this point in time, it is anticipated that cohorts on the order of 5 students would be admitted annually. By making this a site specific degree program for national laboratories, we will ensure that distance students will have access to high-performance computing assets for classroom projects and thesis/dissertation research. Also, since the national laboratories have educational offices there will be on-site assets for synchronous delivery of course content and a professional staff for oversight of classroom functions such as exam proctoring and local supervision of course projects.

MISSISSIPPI STATE
UNIVERSITY
Center for Advanced Vehicular Systems

September 9, 2014

To Whom It May Concern

Dear Sir/Madam,

The purpose of this letter is to certify that the Level-1 members of the Graduate Faculty for the Computational Engineering (CME) degree program support the offering of the Master of Science (MS) degree as a distance-education graduate program. Since this is an interdisciplinary degree program it is important to acquire the agreement of the faculty who will be offering domain-related courses via distance from their home departments. Additionally, the requirements of the Computational Engineering program direct the students not only to evidence academic knowledge in an application domain, but also in High Performance Computing and Numerical Mathematics. To ensure distance students have access to these academic courses, we have also attached letters of commitment from the Department of Computer Science and Engineering and from the Department of Mathematics and Statistics, as evidence of their intent to offer adequate courses for the successful distance delivery of the Computational Engineering MS degree. Should you have any questions concerning this matter, please do not hesitate to contact either one of us.

Sincerely,

Roger L. King
CAVS Director
CME Department Head

Pasquale Cinnella
Graduate Coordinator

CAVS

Box 5405, Mississippi State, MS 39762 • 200 Research Boulevard, Starkville, MS 39759 • www.cavs.msstate.edu

Level-1 CME Graduate Faculty, in support of offering the MS in CME as a distance-education graduate program (page 1 of 2):

Dr. Anatoli Afanasjev
Professor
Physics & Astronomy

Dr. Derek Anderson
Assistant Professor
Electrical & Computer Engineering

EMAIL APPROVAL 10/21/2014
Dr. Douglas Bammann
Professor, Endowed Chair
Mechanical Engineering

Dr. Ioana Banicescu
Professor
Computer Science & Engineering

Dr. Shanti Bhushan
Assistant Research Professor
CAVS

Dr. Lori Bruce
Giles Professor, Dean of the Graduate School
Electrical & Computer Engineering

Dr. Greg Burgreen
Associate Research Professor
CAVS

Dr. Ricolindo Carino
Associate Research Professor
CAVS

Dr. Pasquale Cinnella
Professor
Aerospace Engineering

EMAIL APPROVAL 10/8/2014
Dr. Haitham El Kadiri
Assistant Professor
Mechanical Engineering

EMAIL APPROVAL 10/7/2014
Dr. James Fowler
Professor, Endowed Chair
Electrical & Computer Engineering

Dr. Philip Gullett
Associate Professor
Civil & Environmental Engineering

Dr. Youssef Hammi
Assistant Research Professor
CAVS

Dr. Mark Horstemeyer
Giles Professor, Endowed Chair
Mechanical Engineering

Dr. Mark Janus
Associate Professor
Aerospace Engineering

Dr. SeongGon Kim
Professor
Physics & Astronomy

Dr. Seongjai Kim
Professor
Mathematics & Statistics

Dr. Roger King
Giles Professor, Endowed Chair, CAVS Director
Electrical & Computer Engineering

Level-1 CME Graduate Faculty, in support of offering the MS in CME as a distance-education graduate program (page 2 of 2):

Dr. Thomas Lacy
Professor, Interim Dept. Head
Aerospace Engineering

Dr. David Marcum
Professor
Mechanical Engineering

Dr. Mark Novotny
Professor, Department Head
Physics & Astronomy

Dr. Andy Perkins
Associate Professor
Computer Science & Engineering

Dr. Donna Reese
Professor, Department Head
Computer Science & Engineering

Dr. Edward Swan
Professor
Computer Science & Engineering

Dr. Xiaoling Tong
Assistant Research Professor
CAVS

Dr. Xiao Wang
Assistant Research Professor
CAVS

Dr. Edward Luke
Associate Professor
Computer Science & Engineering

Dr. Robert Moorhead
Professor, Endowed Chair, GRI/NGI Director
Electrical & Computer Engineering

Dr. Seth Oppenheimer
Professor
Mathematics & Statistics

Dr. Masoud Rais-Rohani
Professor, Associate Dean
Aerospace Engineering

Dr. Tonya Stone
Assistant Professor
Mechanical Engineering

Dr. David Thompson
Professor, Endowed Chair
Aerospace Engineering

Dr. Keith Walters
Associate Professor
Mechanical Engineering

Dr. Nicholas Younan
Professor, Endowed Chair, Dept. Head
Electrical & Computer Engineering

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 or School: Engineering **Department:** Dean of Engineering/CAVS

Contact Person: Roger L. King **Phone:** 52298 **E-mail:** rking@cavs.msstate.edu

Nature of Change: Distance Approval **Date Initiated:** 08/01/14 **Effective Date:** 08/01/15

Current Degree Program Name: Doctor of Philosophy

Major: Computational Engineering **Concentration:**

Summary of Proposed Changes:

Offer the program via distance learning.

Approved: _____ Department Head	*Date:* 8/27/14
_____ Chair, College or School Curriculum Committee	11/10/14
for _____ Dean of College or School	11/25/14
_____ Chair, University Committee on Courses and Curricula	
_____ Chair, Graduate Council (if applicable)	
_____ Chair, Deans Council	

Degree Approval for Distance Learning (Existing Program)
Ph.D. in Computational Engineering

1. CATALOG DESCRIPTION

The Computational Engineering graduate program is interdisciplinary, with faculty drawn from the academic departments of the College of Engineering and the College of Arts and Sciences, as well as the research faculty of the HPC^2. Programs of study and research leading to both the Master of Science degree and the Doctor of Philosophy degree are available. There is an increased demand by industry, academia, and government for scientists and engineers with a better knowledge of the skills necessary to create new technologies and improve upon existing ones through simulation tools. Such programs come with curricula covering a large range of subjects, so that they can produce scientists and engineers with broad backgrounds and viewpoints. These scientists and engineers can then be expected to understand the basic approaches to solving analytical problems and also using mathematical and computational tools required to arrive at solutions. The program is open to students with undergraduate degrees in engineering, computer science, mathematics, or a physical science. Research assistantships are available through research projects in the HPC^2.

Admission Criteria
To be admitted, the student must meet the admission requirements of the Office of the Graduate School, receive a positive recommendation from the Computational Engineering screening committee, and be accepted as a student by a member of the Computational Engineering graduate faculty. International students must have scored at least 550 PBT (213 CBT or 79 iBT) on the Test of English as a Foreign Language (TOEFL) or 6.5 on the International English Language Testing System (IELTS). Students with a degree from a program that is not EAC/ABET accredited must have a satisfactory performance on the GRE.

In addition, highly qualified undergraduate students, with a minimum equivalent GPA of 3.50/4.00 on the last 60 credit hours of undergraduate courses, or a first class with distinction degree classification for students from institutions where no GPA is reported, or a satisfactory performance on the GRE for students from a non-ABET-accredited program, can be directly admitted to the Ph.D. program.

Provisional Admission—Because of the interdisciplinary nature of the Computational Engineering program, virtually all students are required to take some prerequisite courses. Nevertheless, all students admitted to the program are granted regular admission. Provisional admission is not approved.

Program of Study
The specific requirements for the degrees are governed by the requirements of the Office of the Graduate School, the College of Engineering, and by the student's graduate committee. The committee must include at least one Computational Engineering faculty member from each of the following areas: 1) a Computational Engineering application area, 2) high-performance computing, and 3) numerical mathematics. The graduate committee will ensure that the student's program of study adequately addresses each of the three primary cross-disciplinary areas (an application area, high-performance computing, and numerical mathematics), and students are

encouraged to include one or more courses in scientific visualization or graphics. The composition of the graduate committee and the student's program of study must be approved by the Computational Engineering Graduate Coordinator.

Academic Performance
Continued enrollment in the graduate program in Computational Engineering is dependent upon satisfactory performance in the courses and satisfactory progress toward completion of the degree. To achieve satisfactory performance, a student must

1. maintain a B average on:
    a) all undergraduate prerequisite courses;
    b) all graduate courses completed after admission to the program;
    c) all graduate courses included on the student's program of study;
2. have no more than one grade less than C;
3. have a major advisor and a supervisory committee (after the first two semesters of enrollment).

Should a student's cumulative grade point average (in any of the three categories above) be less than 3.00 at the end of a term, the student will be placed on "probation" and will be given one semester to earn a cumulative grade point average of 3.00 or greater. If at the end of the probationary term the student's cumulative grade point average (in any of the three categories above) is less than 3.00, the student's program of study will be terminated immediately. If the student enrolls in the summer term, it will count as one term.

Should a student earn a second grade less than a C, the student's program of study will be terminated immediately. Should a student who is beyond his/her second period of study not have a major advisor and supervisory committee, the student will be placed on probation and given one semester to form a committee. Should the student not be able to form a committee, his/her program of study will be terminated. A student may appeal termination of his/her study to the Computational Engineering Supervisory Committee.

Completion Requirements (Ph.D.)
The Doctor of Philosophy in Computational Engineering, in addition to the coursework and research hours, includes a comprehensive examination, a dissertation, and dissertation defense. Each candidate for the doctoral degree must conduct research and present a dissertation on that research that 1) demonstrates a mastery of the techniques of research and 2) makes a very distinct contribution to the field of Computational Engineering. The dissertation must conform to the rules of the Office of the Graduate School.

For direct-admit Ph.D. students, 72 credit hours beyond the B.S. are required (48 credit hours of coursework and 24 credit hours of dissertation research).

2. CURRICULUM OUTLINE

No specific courses are required. Each student's Program of Study is developed in conjunction with the student's major professor and graduate committee and designed to fulfill the degree requirements in three major areas: 1) a Computational Engineering application area; 2) high performance computing; and 3) numerical mathematics. A comprehensive examination is required

after completion of the graduate coursework. In conjunction with the comprehensive exam, the student will submit a written proposal for their dissertation topic and defend it in an oral presentation. At least 24 hours of dissertation research are required. A final oral dissertation defense is required. All requirements for the distance-learning program are identical to those for Campus 1 students. The student's physical presence on the Starkville campus may be encouraged for specific activities (e.g., candidacy examination or dissertation defense), however it is not required. Oral exams via teleconference or WebEx have been used successfully for a few Campus 1 students in CME and for many Campus 5 students in other distance programs in the Bagley College of Engineering.
Graduate courses in several Computational Engineering application areas, high performance computing, and numerical mathematics are already approved for distance delivery. Campus 5 students will be able to complete their Programs of Study without any delays or undue burdens.

3. JUSTIFICATION FOR DISTANCE LEARNING OFFERING

IHL has as one of its strategic initiatives that Universities in the state of Mississippi produce "more graduates of even higher quality." With the acceptance of high performance computing as a third mode of scientific investigation, computational simulations now join theoretical analysis and physical experimentation as the newest tool for discovering new knowledge. This development has created the need for degree programs, such as Computational Engineering, to be delivered via distance to meet the nation's demand for scientists and engineers with the broad understanding necessary to develop and apply these new investigative tools to scientific research and engineering design. One of the key areas in which this new knowledge and the Computational Engineering degree program are needed is in the nation's national laboratories (e.g., DoD, NASA, and DOE) where high-performance-computing assets are readily available.

ACADEMIC MISCONDUCT

All distance students must have proctors (approved by the home department of the Instructor of Record), who will administer exams for each distance-learning course. All exams will be new or substantially revised each time a course is offered. All research will be conducted at facilities that have been certified by MSU. A Distance Student Certification of Off-Campus/Non-MSU Research Facility form will be processed for each student enrolled, as necessary.

TARGET AUDIENCE

The distance version of the CME program is envisioned as a site-specific distance degree program that can be delivered to the nation's national laboratories (e.g., ERDC, MSFC, and ORNL). It is our intent to limit acceptance of students into the program from just this caliber of government laboratory. By making CME a site-specific degree program for national laboratories, we will ensure that distance students will have access to high-performance computing assets for classroom projects and thesis/dissertation research. Also, since the national laboratories have educational offices, there will be on-site assets for delivery of course content and a professional staff for oversight of classroom functions, such as exam proctoring and local supervision of course projects.

4. LEARNING OUTCOMES

These are the same learning outcomes as for the Campus 1 students:

1. Students will demonstrate mastery of relevant body of knowledge at advanced level in Computational Engineering
2. Students will demonstrate the ability to conduct and communicate advanced level research that contributes to the profession
3. Students will have initiated a professional career

5. PROPOSAL SUBMISSION

This program proposal is accompanied by a distance-approval proposal for CME 9000, Research/Dissertation.

6. EFFECTIVE DATE

August 2015

7. CONTACT PERSON

Roger L. King, Director & Endowed Chair and Giles Distinguished Professor
CAVS
Box 9618
Phone: 662-325-2298
Email: rking@cavs.msstate.edu

8. MASTER SCHEDULE

Inclusion in the Master Schedule expected effective Fall 2015.

9. SUPPORT

Enclosed are letters of support from the Department of Mathematics and Statistics and the Department of Computer Science and Engineering. Additionally, a letter of support signed by the Level 1 CME Graduate Faculty is enclosed. The letters attest that there are sufficient courses offered via distance to allow students to complete their Programs of Study.
Library resources in existence for the Campus 1 program are adequate, and will be accessible to Campus 5 students. Similar arrangements are already in place for other distance programs in the Bagley College of Engineering.

APPENDIX 8: DECLARATION OF INTENT TO OFFER A DEGREE PROGRAM BY DISTANCE LEARNING

Institution: Mississippi State University

Date of Initial Program Approval:	Date of Implementation:	Cost of Implementation:
Fall 1990 (on-campus)	Fall 2015	Minimal

Program Title as Appears on Academic Program Inventory, Diploma, and Transcript:	Six Digit CIP Code:
Computational Engineering	30.0301

Degree(s) to be Awarded:	Credit Hour Requirements:
Doctor of Philosophy	72 hours beyond the B.S.

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?	Yes
Will this program require separate admission from those offered on-campus?	Yes
Will this program have different fees or tuition rates from those offered on-campus?	No*

Responsible Academic Unit(s):	Institutional Contact:
Dean of Engineering/CAVS	Roger L. King, CAVS Director

Number of Students Expected to Enroll in First Six Years:		Number of Graduates Expected in First Six Years:	
Year One	4	Year One	0
Year Two	4	Year Two	0
Year Three	6	Year Three	0
Year Four	8	Year Four	2
Year Five	10	Year Five	4
Year Six	12	Year Six	6
Total	44	Total	12**

Program Summary:

*Tuition rates are the same, distance fees may be assessed

**These are full-time employees and part-time students, therefore the graduation rates will not be as large as those for full-time students

Institutional Executive Officer Signature _____ Date _____

MISSISSIPPI STATE
UNIVERSITY

DEPARTMENT OF MATHEMATICS AND STATISTICS

January 28, 2013

Rita A. Burrell
Manager, Graduate and Distance Education
Secretary, Continuing Professional Development Division, ASEE
Standing Chair, University Committee, GEM Executive Committee
Bagley College of Engineering

Dear Ms. Burrell,

The Department of Mathematics and Statistics regularly offers courses for MA 6313 Numerical Analysis I, MA 6323 Numerical Analysis II, MA 8203 Foundations of Applied Mathematics I, MA 8213 Foundations of Applied Mathematics II, and MA 8463 Numerical Linear Algebra. The Bagley College of Engineering has requested that these courses be offered as distance courses for students who are pursuing graduate degrees in engineering. MA 6313, MA 6323, MA 8203, and MA 8213 have already been approved by UCCC to be offered as distance courses. We are in the process of proposing MA 8463 for approval through UCCC for distance learning as well.

The Department of Mathematics and Statistics is highly supportive of offering these courses by distance learning for students in the Bagley College of Engineering, as long as we can offer the distance learning courses at the same time as our face-to-face courses. We would be happy to assist in any way appropriate.

Sincerely yours,

Mohsen Razzaghi
Department Head

P.O. Box MA, 410 Allen Hall, MS State, MS 39762
www.msstate.edu/dept/math • office@math.msstate.edu • Phone: (662) 325-3414 • Fax: (662) 325-0005

MISSISSIPPI STATE
UNIVERSITY

Computer Science and Engineering

December 3, 2012

Dr. Roger King, Director
Center for Advanced Vehicular Systems
Mississippi State University

Dear Dr. King,

The Department of Computer Science and Engineering supports the attached Distance Education Plan for the Computational Engineering MS and PhD degrees. Specifically, the CSE department is committed to making available distance offerings of the following CSE graduate courses on a regular rotation for CME distance students who satisfy the course prerequisites:

CSE 6163 Design of Parallel Algorithms
CSE 6833 Introduction to Algorithms
CSE 6753 Foundations in Computation
CSE 8833 Algorithms
CSE 8843 Sequential and Parallel Algorithms

These CSE courses have already been approved by UCCC for distance offering and several have already been taught by distance to the department's graduate cohort at the Engineering Research and Design Center in Vicksburg, MS.

The department understands that these offerings will have the following characteristics:

- The courses will be delivered synchronously to the distance students in conjunction with on-campus delivery of the courses
- The students will be from facilities where there are professional staff available for proctoring exams and local supervision of course projects
- Where possible, cohorts of students who can take the courses together at a facility should be sought to reduce the number of distance offerings of these courses to multiple simultaneous sites.

JAMES WORTH BAGLEY COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY

665 George Perry Street • 300 Butler Hall • Post Office Box 9637 • Mississippi State, MS 39762
dreese@cse.msstate.edu • 662.325.2756 Phone • 662.325.8997 Fax • www.cse.msstate.edu

The CSE Department anticipates that CSE faculty will be included on committees for these students where appropriate and that these collaborations on the distance education programs may help to facilitate research collaborations in the future.

Sincerely,

Donna S Reese

Dr. Donna Reese
Professor and Department Head

Distance Education Plan for Computational Engineering (MS and PhD)

IHL has as one of its Strategic Initiatives that we have "More Graduates of Even Higher Quality." To help achieve this goal it is proposed to offer both the Master of Science and Doctoral degrees in Computational Engineering (CME) via distance. With the acceptance of high performance computing as a third mode of scientific investigation, computational simulation now joins theoretical analysis and physical experimentation as tools for discovering new knowledge. This development has created the need for new curricula to meet the nation's demand for scientists and engineers with the broad understanding necessary to develop and apply these new investigative tools to scientific research and engineering design. One of the key areas in which this new knowledge and educational degree programs is needed is in the nation's national laboratories (e.g., DoD and DOE) where high performance computing assets are readily available.

The specific requirements for the degrees are governed by the requirements of the Office of the Graduate School, the Bagley College of Engineering, and by the student's graduate committee. However, as an interdisciplinary degree program, the student's program of study must address three primary core areas - an application domain, high-performance computing, and numerical mathematics. To enable CME to be approved as a distance degree by the university it must be demonstrated that each student will have adequate access to distance courses to meet the program's requirements. Therefore, it is requested that the Department of Computer Science and Engineering make available the following five courses for distance CME students via a formalized course rotation scheme:

CSE 6163 Design of Parallel Algorithms
CSE 6833 Introduction to Algorithms
CSE 6753 Foundations in Computation
CSE 8833 Algorithms
CSE 8843 Sequential and Parallel Algorithms

These five courses offered in a rotation scheme should enable distance students to satisfy their high-performance computing degree requirement within a reasonable timeframe.

As stated previously, this is envisioned as a site specific degree program that can be delivered to the nation's national laboratories and it is the intent that we limit acceptance of students into the program from just these facilities. At this point in time, it is anticipated that cohorts on the order of 5 students would be admitted annually. By making this a site specific degree program for national laboratories, we will ensure that distance students will have access to high-performance computing assets for classroom projects and thesis/dissertation research. Also, since the national laboratories have educational offices there will be on-site assets for synchronous delivery of course content and a professional staff for oversight of classroom functions such as exam proctoring and local supervision of course projects.

MISSISSIPPI STATE
UNIVERSITY

Center for Advanced Vehicular Systems

September 9, 2014

To Whom It May Concern

Dear Sir/Madam,

The purpose of this letter is to certify that the Level-1 members of the Graduate Faculty for the Computational Engineering (CME) degree program support the offering of the Doctor of Philosophy degree as a distance-education graduate program. Since this is an interdisciplinary degree program it is important to acquire the agreement of the faculty who will be offering domain-related courses via distance from their home departments. Additionally, the requirements of the Computational Engineering program direct the students not only to evidence academic knowledge in an application domain, but also in High Performance Computing and Numerical Mathematics. To ensure distance students have access to these academic courses, we have also attached letters of commitment from the Department of Computer Science and Engineering and from the Department of Mathematics and Statistics, as evidence of their intent to offer adequate courses for the successful distance delivery of the Computational Engineering PhD degree. Should you have any questions concerning this matter, please do not hesitate to contact either one of us.

Sincerely,

Roger L. King
CAVS Director
CME Department Head

Pasquale Cinnella
Graduate Coordinator

CAVS

Box 5405, Mississippi State, MS 39762 • 200 Research Boulevard, Starkville, MS 39759 • www.cavs.msstate.edu

Level-1 CME Graduate Faculty, in support of offering the PhD in CME as a distance-education graduate program (page 1 of 2):

Dr. Anatoli Afanasjev
Professor
Physics & Astronomy

Dr. Derek Anderson
Assistant Professor
Electrical & Computer Engineering

* EMAIL APPROVAL 10/21/2014 *
Dr. Douglas Bammann
Professor, Endowed Chair
Mechanical Engineering

Dr. Ioana Banicescu
Professor
Computer Science & Engineering

Dr. Shanti Bhushan
Assistant Research Professor
CAVS

Dr. Lori Bruce
Giles Professor, Dean of the Graduate School
Electrical & Computer Engineering

Dr. Greg Burgreen
Associate Research Professor
CAVS

Dr. Ricolindo Carino
Associate Research Professor
CAVS

Dr. Pasquale Cinnella
Professor
Aerospace Engineering

* EMAIL APPROVAL 10/8/2014 *
Dr. Haitham El Kadiri
Assistant Professor
Mechanical Engineering

* EMAIL APPROVAL 10/7/2014 *
Dr. James Fowler
Professor, Endowed Chair
Electrical & Computer Engineering

Dr. Philip Gullett
Associate Professor
Civil & Environmental Engineering

Dr. Youssef Hammi
Assistant Research Professor
CAVS

Dr. Mark Horstemeyer
Giles Professor, Endowed Chair
Mechanical Engineering

Dr. Mark Janus
Associate Professor
Aerospace Engineering

Dr. Seong-Gon Kim
Professor
Physics & Astronomy

Dr. Seongjai Kim
Professor
Mathematics & Statistics

Dr. Roger King
Giles Professor, Endowed Chair, CAVS Director
Electrical & Computer Engineering

Level-1 CME Graduate Faculty, in support of offering the PhD in CME as a distance-education graduate program (page 2 of 2):

Dr. Thomas Lacy
Professor, Interim Dept. Head
Aerospace Engineering

Dr. Edward Luke
Associate Professor
Computer Science & Engineering

Dr. David Marcum
Professor
Mechanical Engineering

Dr. Robert Moorhead
Professor, Endowed Chair, GRI/NGI Director
Electrical & Computer Engineering

Dr. Mark Novotny
Professor, Department Head
Physics & Astronomy

Dr. Seth Oppenheimer
Professor
Mathematics & Statistics

Dr. Andy Perkins
Associate Professor
Computer Science & Engineering

Dr. Masoud Rais-Rohani
Professor, Associate Dean
Aerospace Engineering

Dr. Donna Reese
Professor, Department Head
Computer Science & Engineering

Dr. Tonya Stone
Assistant Professor
Mechanical Engineering

Dr. Edward Swan
Professor
Computer Science & Engineering

Dr. David Thompson
Professor, Endowed Chair
Aerospace Engineering

Dr. Xiaoling Tong
Assistant Research Professor
CAVS

Dr. Keith Walters
Associate Professor
Mechanical Engineering

Dr. Xiao Wang
Assistant Research Professor
CAVS

Dr. Nicholas Younan
Professor, Endowed Chair, Dept. Head
Electrical & Computer Engineering