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 to UCCC Mail Stop 9702 (281 Garner Hall), Phone: 325-9410.

College: College of Arts & Sciences **Department: Biological Sciences**

Contact Person: Brandy Roberts Mail Stop:9536 E-mail: roberts@biology.msstate.edu

Nature of Change: 1-hour Introductory Course Added to Core, Requiring C grade in All Major Courses, Statistics Course Approved to Meet Math Requirement, Correction Regarding the Biochemistry Requirement under "Additional Department Requirements"

Date Initiated: 2/15/23 Effective Date: Fall 2023

Current Degree Program Name: B.S. in Microbiology

Major: Microbiology **Concentration:**

New Degree Program Name: N/A

Major: **Concentration:**

Summary of Proposed Changes

Four changes were made to the degree program for Microbiology. A statement was added in the overview section of the catalog. Students are required to earn a C or higher to receive credit for a biology course applied to the degree. A 1-hour introductory course was added to the Microbiology core (BIO 1111 Welcome to Bio Sci). The lower-level statistics course (ST 2113 Intro to Stats) was added to the option of approved courses to meet the math requirements. A correction was made to state one course is required to complete the biochemistry requirement. The use of "and" is incorrect and should be changed to "or." Students can choose BCH 4013, BCH 4603, or BCH 4613 to meet the requirement.

Approved:	Date:
Angus Dawe Digitally signed by Angus Dawe Date: 2023.03.17 17:11:51 -05'00'	3/17/23
Department Head	
Director of Academic Quality	3/20/23
Chair, College or School Curriculum Committee	4/17/23
Dean of College or School	4/17/23
Chair, University Committee on Courses and Curricula	
Chair, Graduate Council(if applicable)	
Chair, Deans Council	

DEGREE MODIFICATION OUTLINE FORM

Use the chart below to make modifications to an existing undergraduate degree outline. If any General Education (Core) course is acceptable in the category, please indicate by saying "any Gen Ed course". There is no need to type in the whole list. All deleted courses and information should be shown in *italics* and all new courses and information in **bold**. Include the course prefix, number, and title in both columns. Expand this table as needed.

CURRENT Degree Description	PROPOSED Degree Description
Degree: Bachelor of Science Major: Microbiology	No change
The Department of Biological Sciences provides an outstanding educational experience across the entire field of biology. Our expert faculty have diverse research and teaching interests that span molecular and cellular biology, microbiology, computational biology, evolutionary biology, genetics, and ecology, of all living organisms. Our faculty are actively engaged in highly interdisciplinary cutting-edge research and are committed to providing students with an extensive exposure to biological processes and systems and a deep understanding of biology at environmental, organismal, cellular, and molecular levels through engaging lectures and hands-on laboratory experiences. Graduates leave the department with the knowledge base and critical thinking skills to be successful in graduate programs leading to M.S. or Ph.D., medical, dental and veterinary schools, health professional schools, research, and teaching. Majors offered in the department are the B.S. in Biological Sciences, B.S. in Medical Technology, B.S. in Microbiology, M.S. in Biological Sciences, Ph.D. in Biological Sciences, and an M.S. in General Biology, a distance program for science teachers. An accelerated Master's program is available to outstanding students engaged in undergraduate research. Medical Technology Major (MEDT) Major Advisor: Brandy Roberts, Dir. of Undergraduate Advising *Office: 117 Harned Hall* Medical technologists are prepared for positions in hospital laboratories, clinics, research laboratories, the Public Health Service industry, and in various local, state and federal health organizations. The medical technology curriculum leading to the Bachelor of Science degree from Mississippi State University includes three years of study at Mississippi State University and one year of study in a hospital School of Medical Technology accredited by the National Accrediting Agency for Clinical Laboratory Sciences. Admission to the hospital school is competitive. A student who has satisfactorily completed the three years on the campus and has gained admission to a hospital school will register for the hospital phase and will be considered to be enrolled at Mississippi State during the final year of study. Graduates are prepared for certification by several national agencies.	The Department of Biological Sciences provides an outstanding educational experience across the entire field of biology. Our expert faculty have diverse research and teaching interests that span molecular and cellular biology, microbiology, computational biology, evolutionary biology, genetics, and ecology, of all living organisms. Our faculty are actively engaged in highly interdisciplinary cutting-edge research and are committed to providing students with an extensive exposure to biological processes and systems and a deep understanding of biology at environmental, organismal, cellular, and molecular levels through engaging lectures and hands-on laboratory experiences. Graduates leave the department with the knowledge base and critical thinking skills to be successful in graduate programs leading to M.S. or Ph.D., medical, dental and veterinary schools, health professional schools, research, and teaching. Majors offered in the department are the B.S. in Biological Sciences, B.S. in Medical Technology, B.S. in Microbiology. **Students must earn a grade of C or higher in all BIO courses applied toward the biological sciences or microbiology major requirements.** **Graduate programs offered in the department are the** M.S. in Biological Sciences, Ph.D. in Biological Sciences, and an M.S. in General Biology, a distance program for science teachers. An accelerated Master's program is available to outstanding students engaged in undergraduate research. Medical Technology Major (MEDT) Major Advisor: Brandy Roberts, Dir. of Undergraduate Advising **Office: 115 Harned Hall** Medical technologists are prepared for positions in hospital laboratories, clinics, research laboratories, the Public Health Service industry, and in various local, state and federal health organizations. The medical technology curriculum leading to the Bachelor of Science degree from Mississippi State University includes three years of study at Mississippi State University and one year of study in a hospital School of Medical Technology accredited by the National Accrediting Agency for Clinical Laboratory Sciences. Admission to the hospital school is competitive. A student who has satisfactorily completed the three years on the campus and has gained admission to a hospital school will register for the hospital

		phase and will be considered to be enrolled at Mississippi State during the final year of study. Graduates are prepared for certification by several national agencies.	
CURRENT CURRICULUM OUTLINE	Required Hours	**PROPOSED CURRICULUM OUTLINE**	Required Hours
English Composition: EN 1103 English Composition I or *EN 1163 Accelerated Composition I* EN 1113 English Composition II or EN 1173 Accelerated Composition II	 3 3	English Composition: EN 1103 English Composition I or **EN 1104 Expanded English Composition I** EN 1113 English Composition II or EN 1173 Accelerated Composition II	 3 3
Foreign Language: *2 semesters one Foreign Language (see advisor)*	 *6*	Foreign Language: **Foreign Language I** **Foreign Language II**	 **3** **3**
Humanities: Literature – *see A&S requirements* History – *see A&S requirements*	 3 3	Humanities: Literature– **A&S core** History– **A&S core**	 3 3
Mathematics: MA 1713 Calculus ST 3123 Introduction to Statistical Inference	 3 3	Mathematics: MA 1713 Calculus **I** **ST 2113 Intro to Stats or** ST 3123 Introduction to Statistical Inference	 3 3
Fine Arts: *See A&S requirements*	 3	Fine Arts: **A&S core**	 3
Natural Sciences: *See Major Core – Consult advisor for specific*		Natural Sciences: **Satisfied within the major**	
Social Sciences: *Must be from 2 different areas and from A&S Core. Consult advisor for acceptable areas.*	 6	Social Sciences: **A&S core** [1]	 6
Oral Communication *Requirement*: CO 1003 Fundamentals of Public Speaking or CO 1013 Introduction to Communication	 3	Oral Communication: CO 1003 Fundamentals of Public Speaking or CO 1013 Introduction to Communication	 3
Writing Requirement: *Satisfied by the successful completion of BIO 4405, BIO 4442, and BIO 4463*		**Jr/Sr Writing**: **Satisfied with BIO 4405, BIO 4442, and BIO 4463 in the major**	
Computer Literacy Requirement: *Satisfied by the successful completion of BIO 4405, BIO 4442, and BIO 4463*			
Departmental Core: BIO 1134 Biology I BIO 1144 Biology II BIO 2103 Cell Biology	 4 4 3	Departmental Core: **BIO 1111 Welcome to BIO SCI** BIO 1134 Biology I BIO 1144 Biology II BIO 2103 Cell Biology	 1 4 4 3
Major Core: BIO 3304 General Microbiology	 4	Major Core: BIO 3304 General Microbiology	 4

BIO 4405 Pathogenic Microbiology BIO 4413 Immunology BIO 4433 Principles of Virology BIO 4443 Bacterial Genetics BIO 4442 Bacterial Genetics Laboratory BIO 4463 Bacterial Physiology *Microbiology Electives (Choose from any 3000- or 4000-BIO courses, excluding BIO 3004, BIO 3014, and BIO 4000)*	5 3 3 3 2 3 8	BIO 4405 Pathogenic Microbiology BIO 4413 Immunology BIO 4433 Principles of Virology BIO 4443 Bacterial Genetics BIO 4442 Bacterial Genetics Laboratory BIO 4463 Bacterial Physiology **Microbiology Upper Division Electives, excluding BIO 3004, BIO 3014, and BIO 4000** [2]	5 3 3 3 2 3 8
Additional *department requirements*: CH 1213 Chemistry I CH 1223 Chemistry II CH 1211 Investigations in Chemistry I CH 1221 Investigations in Chemistry II CH 4513 Organic Chemistry I CH 4523 Organic Chemistry II CH 4511 Organic Chemistry Laboratory I CH 4521 Organic Chemistry Laboratory II *PH 1113 General Physics I* *& PH 1123 General Physics II* *or PH 1133 General Physics III* *BCH 4603 General Biochemistry I* *& BCH 4613 General Biochemistry II* *or BCH 4013 Principles of Biochemistry*	 3 3 1 1 3 3 1 1 *3-6* *3-6*	Additional **Department Requirements**: CH 1213 Chemistry I CH 1211 Investigations in Chemistry I CH 1223 Chemistry II CH 1221 Investigations in Chemistry II CH 4513 Organic Chemistry I CH 4511 Organic Chemistry Laboratory I CH 4523 Organic Chemistry II CH 4521 Organic Chemistry Laboratory II **PH 1113 General Physics I** **PH 1123 General Physics II** **or PH 1133 General Physics III** **BCH Course – choose one:** [3] **BCH 4013 Principles of Biochemistry** **BCH 4603 General Biochemistry I** **BCH 4613 General Biochemistry II**	 3 1 3 1 3 1 3 1 **3** **3** **3**
General Electives: *General Electives*	 *18-21*	General Electives: [4] **Consult advisor**	 **20**
Total Hours	124	Total Hours	124
Applied microbiology courses are strongly recommended, regardless of the department in which they are offered (for example, Food Micro, Environmental Micro, or Soil Micro). Upper division courses in Medical Technology or Biochemistry are also acceptable. Students should see their advisor for assistance in selecting courses for microbiology elective credit. Hours in excess of 8 will reduce the general electives requirement by an equal number. Students planning to attend professional schools should check with the faculty advisor for that program to identify additional courses that may be needed. Such courses can be taken for general elective credit. *For the pre-professional/graduate track, BCH 4603/ and 15 hours of general electives are required. For career track, BCH 4013 may be substituted for BCH 4603/BCH 4613, and 18 hours of general electives are required.*		**Restriction: The following courses may not be used to satisfy any requirement for Biological Sciences majors: BIO 1004, BIO 1023, BIO 1123** **Note: Students must complete 31 upper division hours in A&S in residence at MSU.** [1] **Social Science courses must cover two disciplines and come from A&S core.** [2] Applied microbiology courses are strongly recommended, regardless of the department in which they are offered (for example, Food Micro, Environmental Micro, or Soil Micro). Upper division courses in Medical Technology or Biochemistry are also acceptable. Students should see their advisor for assistance in selecting courses for microbiology elective credit. Hours in excess of 8 will reduce the general electives requirement by an equal number. [3] **Students in the pre-professional/graduate**	

		track must take BCH 4603. Students in the career track may take BCH 4013. [4] Students planning to attend professional schools should check with the faculty advisor for that program to identify additional courses that may be needed. Such courses can be taken for general elective credit.	

Justification:

1) In practice, students are currently required to earn a C or better in all Biology courses to receive credit towards the Biology Core and Biology Science Electives for the Biology degree, and Microbiology Core and Microbiology electives for the Microbiology degree. However, this language does not exist in the catalog. This requirement has been the standard and will continue to be required. It must be added to the catalog description for both degree programs to be enforced using the new system (Degree Works).

2) Students are encouraged to enroll in BIO 1111 to help them begin their degree programs at MSU, but I am requesting it be required. The course provides valuable information such as curriculum requirements, academic policies, student resources, undergraduate research opportunities, university organizations, and potential career paths.

3) A statistics course should be required but allowing students to take ST 3123 or ST 2113 would allow more options to complete the requirement. The inclusion of ST 2113 could also aid transfer students in meeting requirements prior to transfer. In addition, I compared the requirements of twenty-one universities for both biology and microbiology majors of other universities in Mississippi and various schools in the southeast. The proposed change in the math requirement will align with or exceed other 4-year university requirements for biology and microbiology majors. The schools (14 MS Colleges & 7 schools in the SE) used for comparison are Delta State University, University of Southern Mississippi, University of Mississippi, Alcorn State University, Jackson State University, Belhaven University, Blue Mountain College, Mississippi University for Women, Mississippi Valley State, Millsaps College, Tougaloo College, Rust College, Mississippi College, William Carey University, University of Memphis, Louisiana State University, Auburn University, Texas A & M, Georgia State University, University of Alabama, and University of Tennessee.

4) Current catalog for Microbiology (biochemistry requirement):
BCH 4603 General Biochemistry I
& BCH 4613 General Biochemistry II
or BCH 4013 Principles of Biochemistry
Currently, the catalog states that students taking BCH 4603 must take BCH 4613 too to meet the requirement; however, in practice and currently in CAPP, if a student takes BCH 4013, it alone will meet the biochemistry requirement. The difference is the use of "and" and "or". It should read BCH 4013, BCH 4603, or BCH 4613.

MISSISSIPPI STATE UNIVERSITY

COLLEGE OF ARTS & SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES

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April 13, 2023

RE: Modifications to Bachelor of Science (Major: Microbiology) degree program

Dear Dr. Roberts,

The faculty of the Biological Sciences Undergraduate Curriculum Committee have reviewed your modifications to the Bachelor of Science (Major: Microbiology) degree program. We unanimously approve the associated changes and support your pending University Committee on Courses and Curricula application submission.

If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

Evan L. Kaplan, Ph.D.
Instructor, Department of Biological Sciences
Interim Chair, Biological Sciences Undergraduate Curriculum Committee
Mississippi State University

on MSU approved sabbatical leave

Christopher Brooks, Ph.D.
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