

Department of Biological Sciences

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: Mary Celeste Reese, 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.

Biological Sciences Major (BIO)

Major Advisor: Mary Celeste Reese, Dir. of Undergraduate Advising

Office: 117 Harned Hall

General Education and College Requirements

English Composition

EN 1103	English Composition I	3
or EN 1163	Accelerated Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	

Foreign Language

2 semesters - one Foreign Language (see advisor)	6
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Humanities

Literature	3
History	3

Mathematics

MA 1313	College Algebra	3
MA 1323	Trigonometry	3

Fine Arts

See A&S requirements	3
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Natural Sciences

See Major Core - Consult advisor for specifics	9-12
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Social Sciences

Must be from 2 different areas - see A&S requirements	6
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Major Core - Biological Sciences

BIO 1134	Biology I	4
BIO 1144	Biology II	4
BIO 3304	General Microbiology	4

BIO 4133	Human Genetics	3
BIO 2103	Cell Biology	3
Oral Communication Requirement		
CO 1003 or CO 1013	Fundamentals of Public Speaking Introduction to Communication	3
Writing Requirement		
BIO 3013	Professional Writing for Biologists	3
Computer Literacy Requirement		
BIO 3013	Professional Writing for Biologists	3
BIO 4133	Human Genetics	3
Biological Sciences Area Courses - minimum 6 hours in each area ¹		
Area 1: Molecules and Cells ²		6
BIO 4114	Cellular Physiology	
BIO 4413	Immunology	
BIO 4433	Principles of Virology	
BIO 4504	Comparative Vertebrate Embryology	
BIO 4503	Vertebrate Histology	
BCH 4603	General Biochemistry	
BCH 4613	General Biochemistry	
Area 2: Anatomy and Physiology ²		6
BIO 4204	Plant Anatomy	
BIO 4214	General Plant Physiology	
BIO 3504	Comparative Anatomy	
BIO 4514	Animal Physiology	
Area 3: Organisms ²		6
BIO 2113	Plant Biology	
BIO 2213	Survey Plant Kingdom	
BIO 3303	Parasitology	
BIO 4203	Taxonomy of Spermatophytes	
BIO 3524	Biology of Vertebrates	
WFA 4433	Mammalogy	
WFA 4443	Ornithology	
WFA 4453	Ichthyology	
Area 4: Ecology and Evolution ²		6
BIO 3104	Ecology	
BIO 4113	Evolution	
BIO 4213	Plant Ecology	
Life Science Elective ²		
Consult advisor		10
Physical Science Core		
CH 1213	Chemistry I	3
CH 1223	Chemistry II	3
CH 1211	Investigations in Chemistry I	1
CH 1221	Investigations in Chemistry II	1
CH 4513	Organic Chemistry I	3
CH 4523	Organic Chemistry II	3
PH 1113	General Physics I	3
PH 1123 or PH 1133	General Physics II General Physics III	3
General Electives		
General Electives		13
Total Hours		124

- 1 Three Biological Sciences area courses must include a laboratory. A minimum of one animal course and one plant course is required from Areas 2, 3 or 4.)
- 2 Hours in excess of 24 hours from area courses may be deducted from elective hours. Life Science electives may be taken in other Departments but must be courses for respective "majors". See advisor.

NOTE: University, College and Department restrictions - the following courses may not be used to meet the above science requirements: BIO 1004, BIO 1023, BIO 1123, BIO 3004, BIO 3014.

Minor in Biological Sciences

BIO 1134	Biology I	4
BIO 1144	Biology II	4
BIO 2103	Cell Biology	3
BIO 3304	General Microbiology	4
BIO 4133	Human Genetics	3
Areas 3 or 4 listed above		3-4
Total Hours		21-22

Microbiology Major (MIC)

Major Advisor: Mary Celeste Reese, Dir. of Undergraduate Advising
Office: 117 Harned Hall

General Education and College Requirements

English Composition

EN 1103 or EN 1163	English Composition I Accelerated Composition I	3
EN 1113 or EN 1173	English Composition II Accelerated Composition II	3

Foreign Language

2 semesters - one Foreign Language (see advisor) 6

Humanities

Literature - see A&S requirements 3
History - see A&S requirements 3

Mathematics

MA 1713	Calculus I	3
ST 3123	Introduction to Statistical Inference	3

Fine Arts

See A&S requirements 3

Natural Sciences

See Major Core - Consult advisor for specifics

Social Sciences

Must be from 2 different areas and from A&S Core. Consult advisor for acceptable areas. 6

Major Core

BIO 3304	General Microbiology	4
BIO 4405	Pathogenic Microbiology	5
BIO 4413	Immunology	3
BIO 4433	Principles of Virology	3
BIO 4443	Bacterial Genetics	3
BIO 4442	Bacterial Genetics Laboratory	2
BIO 4463	Bacterial Physiology	3
Microbiology Electives		8

Oral Communication Requirement

CO 1003 or CO 1013	Fundamentals of Public Speaking Introduction to Communication	3
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Writing Requirement

BIO 3013	Professional Writing for Biologists	3
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Computer Literacy Requirement

BIO 3013	Professional Writing for Biologists	3
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Departmental Core

BIO 1134	Biology I	4
BIO 1144	Biology II	4
BIO 2103	Cell Biology	3

Additional department requirements

CH 1213	Chemistry I	3
CH 1223	Chemistry II	3
CH 1211	Investigations in Chemistry I	1
CH 1221	Investigations in Chemistry II	1
CH 4513	Organic Chemistry I	3
CH 4523	Organic Chemistry II	3
CH 4511	Organic Chemistry Laboratory I	1
CH 4521	Organic Chemistry Laboratory II	1
PH 1113 & PH 1123 or PH 1133	General Physics I and General Physics II General Physics III	3-6
BCH 4603 & BCH 4613 or BCH 4013	General Biochemistry and General Biochemistry Principles of Biochemistry	3-6

General Electives

General Electives		15-18
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Total Hours		124
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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.

Minor in Microbiology

BIO 1134	Biology I	4
BIO 1144	Biology II	4
BIO 3304	General Microbiology	4
BIO 4405	Pathogenic Microbiology	5

Choose one of the following: 4

BIO 3504	Comparative Anatomy	
BIO 4214	General Plant Physiology	
BIO 4324	Microbiology and Ecology of Soil	
BIO 4404	Environmental Microbiology	
BIO 4414	Microbiology of Foods	
BIO 4514	Animal Physiology	

Total Hours		21
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Medical Technology Major (MEDT) ¹

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General Education and College Requirements

English Composition

EN 1103	English Composition I	3
or EN 1163	Accelerated Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	

Foreign Language

2 semesters - one Foreign Language (see advisor)		6
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Humanities

Literature - see A&S requirements		3
History - see A&S requirements		3

Mathematics

MA 1313	College Algebra	3
MA 1323	Trigonometry	3
or ST 3123	Introduction to Statistical Inference	

Fine Arts

See A&S requirements		3
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Natural Sciences

See Major Core - Consult Advisor for specifics		9-12
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Social Sciences

Must be from 2 different areas - See University/A&S Core		6
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Major Core

BIO 1134	Biology I	4
BIO 3004	Human Anatomy	4
BIO 3303	Parasitology	3
BIO 3304	General Microbiology	4
BIO 4133	Human Genetics	3
BIO 4303	Bioinstrumentation	3
BIO 4405	Pathogenic Microbiology	5
BIO 4413	Immunology	3
BIO 4610	Urinalysis	2-6
BIO 4620	Hematology	2-9
BIO 4630	Special Topics	1-9
BIO 4640	Clinical Micro	2-9
BIO 4650	Immunochemistry	2-9
BIO 4660	Serology/Immunology	2-9
BIO 4670	Clinical Chemistry	2-9
BCH 4013	Principles of Biochemistry	3
CH 1213	Chemistry I	3
CH 1211	Investigations in Chemistry I	1
CH 1223	Chemistry II	3
CH 1221	Investigations in Chemistry II	1
CH 4513	Organic Chemistry I	3
CH 4523	Organic Chemistry II	3
General and Science Electives		9

Oral Communication Requirement

CO 1003	Fundamentals of Public Speaking	3
or CO 1013	Introduction to Communication	

Computer Literacy Requirement

BIO 3013	Professional Writing for Biologists	3
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Writing Requirement		
BIO 3013	Professional Writing for Biologists	3
Total Hours		124

¹ In affiliated hospital schools of Medical Technology, admission is on a competitive basis.

Program Consultants in Cooperating Hospitals

Mississippi State University maintains close contact with the teaching personnel in medical technology at the following hospitals in the area:

- Jennifer Knight, MHS, MLS(ASCP), Program Director, Mississippi Baptist Medical Center, Jackson, Miss.
- Lee Montgomery, MT (ASCP), Program Director, North Mississippi Medical Center, Tupelo, Miss.
- Holly Covas, MT (ASCP), Program Director, Vanderbilt University Medical Center, Nashville, Tenn.