Emphasis-Molecular, Cellular, & MicroBio

B.S. in Biological Science

Description

The B.S. in biological science offers in-depth study of biology and other natural sciences while preparing the student for a variety of careers or for graduate work in many fields including medicine, organismal biology, dentistry, pharmacy, veterinary medicine, education, cell or molecular biology, ecology and conservation biology. This is the degree of choice for those aspiring to be professional scientists. Students may choose one optional emphasis in ecology and evolutionary biology; integrative biology; molecular, cellular, and microbiology; organismal biology; pre-health biological sciences.

Minimum Total Credit Hours: 120

General Education Requirements

Math 261 and 262 are required for the B.S. degree.

Course Requirements

A major in biological science for the B.S. degree consists of a minimum of 42 semester hours of biology including including the introductory courses Bisc 160, 161, 162, 163; ecology (Bisc 322); genetics (Bisc 336); physiology (Bisc 330 or Bisc 438 or Bisc 516); one of the following advanced biology courses (BISC 415, 418, 427, 440, 504, 512, 518, 519, 521, 530, 547, 553); and biology electives to bring the total to 42 credit hours with at least 34 hours at the 300-level or above. Graduating seniors are required to complete the major field achievement test (Bisc 498)

Biology majors may choose to specialize by using their biology electives to add one optional emphasis, which requires a minimum of three courses from the approved list for the emphasis. The same course may not satisfy the biology core courses and an emphasis area. Students who complete relevant special topics, travel course, or research course will consult with the department prior to enrollment in the course to determine if it fulfills a course for an emphasis area.

Seminars and nonmajor courses do not satisfy the minimum or 300-level requirements. In addition, two courses in calculus (Math 261 and 262), 8 hours of general chemistry (Chem 105, 106, 115, and 116), and two semesters of organic chemistry (Chem 221, 222, 225, 226) are required. Bisc 336 and Bisc 330 should be taken during the sophomore year, and Bisc 322 and Bisc 440 should be taken during the junior year.

Other Academic Requirements

Students must achieve a grade of C or better in all course work counted for the major in biological science, and every biology course requires a grade of C or better in all prerequisite courses, including those prerequisite courses from other departments. For example, Bisc 160 and 161 must be passed with a grade of C or better before Bisc 162 and 163 may be taken. In addition, Bisc 160, 161, 162, and 163 must be passed with a grade of C or better before any additional biology course at the 300 level or above is attempted.

Bisc 150, 206, 207, 210, 220, and 492 can not be used toward a major in biological sciences.

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Course Requirements

Emphasis in Molecular, Cellular, and Microbiology:

Requires a minimum of three courses form the following list:

- Bisc 300: Research Methods in Biology
- BISC 305: Science in Practice
- Bisc 306: Virology
- Bisc 333: General Microbiology
- Bisc 370: Introductory Molecular Genetics
- Bisc 372: Introductory Cell Biology
- Bisc 414: Immunology and Serology
- Bisc 418: Introduction to Molecular Systematics
- Bisc 436: Human and Vertebrate Genetics
- Bisc 438: Microbial Physiology
- Bisc 439: Developmental Biology
- Bisc 440: Cell and Molecular Biology
- Bisc 503: Topics in Bioinformatics
- Bisc 507: Cell Biology of Cancer
- Bisc 509: Microbial Genetics
- Bisc 511: Applied Microbiology
- Bisc 520: Medical Microbiology
- Bisc 521: Cell Physiology
- Bisc 522: Microbial Ecology
- Bisc 523: Molecular Microbiol. of Soils & Sediment
- Bisc 541: Cell Biol. of Neurodegenerative Disease
- Bisc 542: Microbial Diversity

- Bisc 548: Plant Cell and Developmental Biology
- Bisc 555: Radiation Biology
- BISC 560: Microbial Experimental Evolution

Degree Requirements

The academic regulations for this degree program, as entered in the University of Mississippi Catalog, are in effect for the current or selected academic year and semester. The University of Mississippi reserves the right to 1) change or withdraw courses; 2) change rules for registration, instruction, and graduation; and 3) change other regulations affecting the student body at any time.

B.S. in Biological Science

General Education

REQUIREMENT	HOURS	DESCRIPTION
First Year Writing I	3	Complete Hon 101, Writ 100 or Writ 101 with a passing grade.
First Year Writing II	3	Complete one of the following courses with a passing grade: Liba 102, Writ 102 or Hon 102.
3 hrs fine arts	3	The course may be chosen from art history, music, dance, and theatre arts. Studio and workshop courses cannot be used to satisfy this requirement. Courses that satisfy this requirement are any Art History (AH); Liba 130, 204, 314; Mus 101, 102, 103, 104, 105; Danc 200; Thea 201, 202. Students who have completed 30 semester hours of undergraduate course work may fulfill the requirement with a 300- or 400-level art history course.
6 hrs literature survey	6	Complete 6 hours of literature survey with a passing grade. Choose from the following courses: Eng 220, 221, 222, 223, 224, 225, or Eng 226.
6 hrs modern/ancient language 200+	6	Successfully complete at least 6 hours at the 200 level or above in one modern or ancient language.
6 hrs social science	6	Successfully complete 6 semester hours in anthropology, economics, political science, psychology, or sociology.
6 hrs social science/humanities	6	Complete 6 hrs social science/humanities with a passing grade. The courses may be chosen from African American studies, American Sign Language, anthropology, classical civilization, economics, Envs 101, gender studies, Greek, history, Latin, Liba 202, 312, linguistics, any of the languages offered by the Deprtment of Modern Languages, philosophy, political science, psychology, religious studies, sociology, and Southern studies; any 3 credit spch, Rhet 201 or Writ at the 200 level or higher.
6 hrs science	6	Successfully complete 2 courses of laboratory science.
2 science labs	8	Successfully complete at least two science laboratory courses.

General Education II

REQUIREMENT	HOURS	DESCRIPTION
Related subjects residence	6	Students must complete at least 6 of the required 18 hours of related subject course work in residence.
Related subjects residence GPA		Student must acheive a GPA of 2.00 in resident hours in related subjects.
Related subjects	18	Complete at least 18 credit hours in the following areas: anthropology, chemistry, geology, math, physics, or psychology.
Related subject GPA		Student must achieve a GPA of 2.00 overall in the related subjects.

Major Requirements

REQUIREMENT	HOURS	DESCRIPTION
Bisc 160 and 161	4	Bisc 160: Biological Sciences I, Bisc 161: Biological Sciences I Laboratory
Bisc 162 and 163	4	Bisc 162: Biological Sciences II, Bisc 163: Biological Sciences II Laboratory
Bisc 322	4	Bisc 322: General Ecology
Bisc 330 or 438 or 516	4	Bisc 438: Microbial Physiology, Bisc 330: Principles of Physiology, Bisc 516: Plant Physiology
Bisc 336	4	Bisc 336: Genetics
4 hrs advanced Biology	4	Complete 4 hrs of advanced Biology with a grade of C or better chosen from the following courses: Bisc 415, 418, 427, 440, 504, 512, 518, 519, 521, 530, 547, and Bisc 553.
18 hrs electives	18	Complete a minimum of 18 credit hours of Bisc electives at the 300 level or above with a grade of C or better.
Bisc 498		Bisc 498: Major Field Achievement Test
34 hrs Biology 300+	34	

REQUIREMENT	HOURS	DESCRIPTION
42 hours Biology	42	Complete at least 42 hours of Biology courses with a grade of C or better.
Biology residency hrs	18	Student must earn at least 18 hours of their major courses in residence. Directed Study (Bisc 492), Bisc 102, Bisc 103, Bisc 104, Bisc 105, Bisc 206, Bisc 207, seminars, and non-major courses do not satisfy departmental core requirements for biology majors.
Overall Major GPA		Please contact your academic advisor for grade point requirements.
Resident Major GPA		Please contact your academic advisor for grade point requirements.

Major Requirements II

REQUIREMENT	HOURS	DESCRIPTION
6 hrs in calculus	6	Successfully complete Math 261 and Math 262.
Chem 105	3	Complete Chem 105 with a passing grade.
Chem 106	3	Complete Chem 106 with a passing grade.
Chem 115	1	Complete Chem 115 with a passing grade.
Chem 116	1	Complete Chem 116 with a passing grade.
Chem 221	3	Complete Chem 221 with a passing grade.
Chem 222	3	Complete Chem 222 with a passing grade.
Chem 225	1	Complete Chem 225 with a passing grade.
Chem 226	1	Complete Chem 226 with a passing grade.

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REQUIREMENT	HOURS	DESCRIPTION
3 courses Mol/Cell/Microbiology	12	Complete 3 courses with a grade of C or better chosen from the following: Bisc 300, 305, 306, 333, 370, 372, 414, 418, 436, 438, 439, 503, 507, 509, 511, 520, 521, 522, 523, 541, 542, 548, 555, & Bisc 560.