BIOLOGICAL SCIENCE (BA)

Description

A B.A. in biological science allows for a flexible course of study and can prepare a student for a variety of careers or graduate work in many fields, including medicine, dentistry, pharmacy, veterinary medicine, organismal biology, education, cell or molecular biology, ecology, and conservation biology. Students may choose from optional emphases in ecology and evolutionary biology; molecular, cellular, and microbiology; organismal biology; pre-health biological sciences. This degree also requires students to select a minor course of study from those approved by the College of Liberal Arts. Students are encouraged to meet with their academic advisor or a biology faculty member to discuss minors that align with their interests.

Minimum Total Credit Hours: 120

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.

General Education

Code	Title	Hours
Select one of the following First Year Writing 1 courses:		3
WRIT 1000	Introduction to College Writing	
or WRIT 1011	First-Year Writing I	
Select one of the following First Year Writing II courses:		3
WRIT 1020	First-Year Writing II	
or LIBA 1020	First Year Seminar	
Select six hours of literature survey from the following:		6
ENGL 2220	Survey in Literary History	
ENGL 2221	Survey of World Literature to 1650	
ENGL 2222	Survey of World Literature since 1650	
ENGL 2223	Survey of American Lit to the Civil War	
ENGL 2224	Survey of American Lit since Civil War	
ENGL 2225	Survey of British Lit to 18th Century	
ENGL 2226	Survey of Brit Lit since Romantic Period	
Select at least six hours of one modern or ancient language at the 2000 level or above [1]		6
Select six hours in History (HIST) course work [2]		6
Select three hours of humanities courses from the following: [3]		3
African American Studies		
Classical Civilization		
ENVS 1010	Humanities and the Environment	
ISOM 2010	Introduction to Gender Studies	
ISOM 2020	Introduction to Queer Studies	
ISOM 3100	Topics in Gender and Culture	
ISOM 3110	Women, Gender & the Environment	
ISOM 3130	Theories in Gender	
ISOM 3140	Men, Women, and Greek Life	
ISOM 3150	Gender and Sexuality in Cinema	
ISOM 3153	Gender and Sexuality in the Media	
ISOM 4120	Advanced Queer Studies	
Philosophy		
Religion		
Southern Studies (any 1000 level only)		
RHET 2010	Introduction to Rhetoric	
LIBA 2020	Interdisciplinary Humanities	
LIBA 3050	Humanities and the Experience of War	
LIBA 3120	Advanced Interdisciplinary Humanities	
Select three hours of Fine Arts courses from the following:		3
Art History		
DANC 2000	Dance Appreciation	
MUSC 1010	Introduction to Music Literature	
MUSC 1020	Fundamentals of Music Theory	
MUSC 1030	Introduction to Music	
MUSC 1040	Introduction to World Music Cultures	
MUSC 1050	Music Theory and Analysis I	
THEA 2010	Appreciation of the Theatre	
THEA 2020	Introduction to Cinema	
LIBA 1300	Introduction to the Fine Arts	
LIBA 2040	Interdisciplinary Arts	
LIBA 3140	Advanced Interdisciplinary Arts	
Select three hours of Math at the 1000 level or above [4]		3
Select six hours of Social Science from the following areas:		6
Anthropology		
Economics		
Political Science		
Psychology		
Sociology		
LIBA 2030	Interdisciplinary Social Sciences	
LIBA 3130	Advanced Interdisc Social Science	
3 science courses, of which 2 must have labs [5]		9-11
Astronomy OR Physics (must be 2 courses in Astronomy or 2 courses in Physics)		
Biology		
Chemistry		
Geology		
LIBA 1500	Integrated Science I	
LIBA 1510	Integrated Science II	
LIBA 2050	Interdisciplinary Sciences	
LIBA 2051	Interdisciplinary Lab Sciences	
LIBA 3150	Advanced Interdisciplinary Sciences	
LIBA 3151	Advanced Interdisciplinary Lab Sciences	
Total Hours		**48-50**

[1] Modern Languages: Arabic, Chinese, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish, & Swahili.
Classics: Ancient Greek and Latin.
Communication Sciences & Disorders: American Sign Language
Philosophy and Religion: Hebrew

[2] Freshmen may not register for 3000 level courses.

[3] In addition, gender studies courses that are cross-listed with African American studies, classical civilization, English, modern languages, philosophy, or religion curses will satisfy this requirement.

[4] Except for MATH 2451 Mathematics for Elementary Teachers I and MATH 2452 Mathematics for Elementary Teachers II.

[5] Courses may be chosen from astronomy, biology, chemistry, geology, LIBA 2050 Interdisciplinary Sciences, LIBA 2051 Interdisciplinary Lab Sciences, LIBA 1500 Integrated Science I, LIBA 1510 Integrated Science II, LIBA 3150 Advanced Interdisciplinary Sciences, LIBA 3151 Advanced Interdisciplinary Lab Sciences and physics. Two semesters of coursework in one subject and one semester in a subject from another department are required. Each course must be a minimum of 3 credit hours. At least two of the courses taken must include laboratories. For some classes, the required laboratory will be an additional 1-hour course. For example, a student might take two 3-hour lecture courses in chemistry along with the two associated 1-hour laboratory courses, and one 3-hour course in biology without laboratory. As a second example, a student might take two 4-hour lecture/laboratory courses in geology and one 3-hour course in astronomy. As a third example, a student might take two chemistry courses, one with lab and one without, and a geology course with lab. Note that a student taking the required 6 hours of one subject (astronomy or physics) from the Department of Physics and Astronomy must take the remaining 3 hours from another department. ASTR 1110 Descriptive Astronomy does not include laboratory work; ASTR 1212 Intro Astronomy of the Solar System and ASTR 1312 Intro Astronomy of Stars and Galaxies include laboratory work and satisfy the requirements for lab-based science credits. A student may not receive credit for taking ASTR 1110 Descriptive Astronomy with either ASTR 1212 Intro Astronomy of the Solar System or ASTR 1312 Intro Astronomy of Stars and Galaxies.

Major Requirements

Code	Title	Hours
BISC 1600	Biological Sciences I	3
BISC 1610	Biological Sciences I Laboratory	1
BISC 1620	Biological Sciences II	3
BISC 1630	Biological Sciences II Laboratory	1
BISC 3220	General Ecology	4
BISC 3360	Genetics	4
BISC 3300	Principles of Physiology	4
or BISC 4380	Microbial Physiology	
or BISC 5016	Plant Physiology	
BISC 4980	Major Field Achievement Test [1]	0
Minimum of 12 hours of BISC electives at the 3000+ level [2]		12
Total Hours		**32**

[1] Must be taken as a senior.

[2] Seminars, BISC 4920 Directed Study in Biological Sciences II, and courses for nonmajors do not satisfy the biology electives requirement.

Major II Requirements

Code	Title	Hours
CHEM 1050	General Chemistry I	3
CHEM 1051	General Chemistry Laboratory I	1
CHEM 1060	General Chemistry II	3
CHEM 1061	General Chemistry Laboratory II	1
4 additional hours of additional science from the following:		4
CHEM 2210 & CHEM 2221	Elementary Organic Chemistry I and Elementary Organic Chem. Laboratory II	
PHYS 2130 & PHYS 2131	General Physics I and Laboratory Physics I	
GEOL 1020 & GEOL 1120	Historical Geology and Historical Geology Laboratory	
Two of the following courses: [1]		6
MATH 1210	College Algebra (but not both)	
or MATH 125	Basic Mathematics for Science & Eng	
MATH 1150	Elementary Statistics	
MATH 1230	Trigonometry	
MATH 2611	Unified Calculus & Analytic Geometry I	
Total Hours		**18**

[1] MATH 1150 Elementary Statistics and MATH 1250 Basic Mathematics for Science & Eng are recommended.

Emphasis-Ecology & Evolutionary Biology

Code	Title	Hours
Select 3 courses from the following:		
BISC 4650R	Principles of Ecological Genetics	
BISC 5036R	Spatial Ecology	
BISC 3000	Research Methods in Biology	
BISC 3010	Evolution	
BISC 3050	Science in Practice	
BISC 3200	Introductory Marine Biology	
BISC 3210	Introductory Aquatic Biology	
BISC 3230	Biology of Invasive Species	
BISC 3450	Symbiosis: From Parasitism to Mutualism	
BISC 3520	Coastal Ecology	
BISC 4130	Conservation Biology	
BISC 4170	Evolution and Medicine	
BISC 4350	Research in Freshwater Biology	
BISC 4430	Ecology of Plant Communities of MS	
BISC 4450	Introduction to Coral-Reef Ecology	
BISC 4480	Tropical Studies in Biology	
BISC 4510	Ecotoxicology	
BISC 5004	Biometry	
BISC 5005	Aquatic Microbiology	
BISC 5010	Theoretical Ecology	
BISC 5013	Limnological Methods	
BISC 5014	Population Genetics	
BISC 5015	Conservation Biology: Viable Populations	
BISC 5024	Aquatic Botany	

BISC 5025	Conservation and Restoration Ecology
BISC 5028	Conservation Physiology
BISC 5030	Advanced Field Study in Ecology
BISC 5034	Freshwater Insects
BISC 5035	Plant-Insect Interactions
BISC 5040	Chemical Ecology
BISC 5055	Biological Oceanography
BISC 5054	Ecological Physiology
BISC 5060	Microbial Experimental Evolution
BISC 5066	Evolutionary Biology
BISC 5067	Evolutionary Biology Laboratory
BISC 5068	Infectious Disease Ecology

Emphasis-Molecular, Cellular, & MicroBio

Code	Title	Hours
Select 3 hours from the following:		
BISC 3000	Research Methods in Biology	
BISC 3050	Science in Practice	
BISC 5100	Diseases of the Nervous System	
BISC 4400	Cell and Molecular Biology	
BISC 3060	Virology	
BISC 3330	General Microbiology	
BISC 3700	Introductory Molecular Genetics	
BISC 3720	Introductory Cell Biology	
BISC 4140	Immunology and Serology	
BISC 4180	Introduction to Molecular Systematics	
BISC 4360	Human and Vertebrate Genetics	
BISC 4380	Microbial Physiology	
BISC 4390	Developmental Biology	
BISC 5003	Topics in Bioinformatics	
BISC 5007	Cell Biology of Cancer	
BISC 5009	Microbial Genetics	
BISC 5011	Applied Microbiology	
BISC 5020	Medical Microbiology	
BISC 5021	Cell Physiology	
BISC 5022	Microbial Ecology	
BISC 5023	Molecular Microbiol. of Soils & Sediment	
BISC 5041	Cell Biol. of Neurodegenerative Disease	
BISC 5042	Microbial Diversity	
BISC 5048	Plant Cell and Developmental Biology	
BISC 5155	Radiation Biology	
BISC 5060	Microbial Experimental Evolution	

Emphasis-Organismal Biology

Code	Title	Hours
Select 3 courses from the following:		
BISC 3450	Symbiosis: From Parasitism to Mutualism	
BISC 3900R	Medical Botany	
BISC 5035	Plant-Insect Interactions	
BISC 3000	Research Methods in Biology	
BISC 3050	Science in Practice	
BISC 3100	Human Anatomy	
BISC 3180	Botany	
BISC 3270	Introductory Neuroscience	
BISC 3290	Biology of Fishes	
BISC 3300	Principles of Physiology	
BISC 3310	Comparative Anatomy of the Vertebrates	
BISC 3320	Comparative Embryology of Vertebrates	
BISC 3340	Ornithology	
BISC 3350	Human Reproduction	
BISC 3370	Introductory Entomology	
BISC 3380	Invertebrate Zoology	
BISC 3390	Phycology	
BISC 3420	Plant Diversity	
BISC 3490	Biology of Sharks and Their Relatives	
BISC 3500	Mammalogy	
BISC 3520	Coastal Ecology	
BISC 4150	Vertebrate Histology	
BISC 4160	Elementary Parasitology	
BISC 4270	Methods in Comparative Neuroscience	
BISC 5002	Mycology	
BISC 5004	Biometry	
BISC 5012	Animal Behavior	
BISC 5016	Plant Physiology	
BISC 5018	Microtechnique	
BISC 5019	Physiology of Aquatic Animals	
BISC 5028	Conservation Physiology	
BISC 5029	Endocrinology	
BISC 5031	Plant Morphology	
BISC 5032	Plant Taxonomy	
BISC 5033	Advanced Neuroscience	
BISC 5038	Hormones and Behavior	
BISC 5043	Functional Neuroanatomy	
BISC 5046	Herpetology	
BISC 5047	Advanced Histology	
BISC 5051	Protozoology	
BISC 5053	Comparative Animal Physiology	

Emphasis-Pre-Health Biological Sciences

Code	Title	Hours
Select 3 courses from the following:		
BISC 3000	Research Methods in Biology	
BISC 4400	Cell and Molecular Biology	
BISC 3900R	Medical Botany	
BISC 5100	Diseases of the Nervous System	
BISC 3050	Science in Practice	
BISC 3060	Virology	
BISC 3100	Human Anatomy	
BISC 3270	Introductory Neuroscience	
BISC 3300	Principles of Physiology	
BISC 3310	Comparative Anatomy of the Vertebrates	
BISC 3320	Comparative Embryology of Vertebrates	

BISC 3330	General Microbiology
BISC 3350	Human Reproduction
BISC 3720	Introductory Cell Biology
BISC 4140	Immunology and Serology
BISC 4150	Vertebrate Histology
BISC 4170	Evolution and Medicine
BISC 4360	Human and Vertebrate Genetics
BISC 4390	Developmental Biology
BISC 5007	Cell Biology of Cancer
BISC 5020	Medical Microbiology
BISC 5021	Cell Physiology
BISC 5029	Endocrinology
BISC 5033	Advanced Neuroscience
BISC 5041	Cell Biol. of Neurodegenerative Disease
BISC 5043	Functional Neuroanatomy

Other Academic Requirements:

Students must achieve a grade of C or better in all coursework counted for the major in biological science, and every biological science course requires a grade of C or better in all prerequisite courses, including those prerequisite courses from other departments.

Additional coursework in physics is recommended for students with the following
emphasis areas or interests: ecology and evolutionary biology, organismal
biology, or pre-health biological sciences.

Additional coursework in geology is recommended for students with the following
emphasis areas or interests: ecology and evolutionary biology or organismal
biology.

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 courses, or independent research courses will
consult with their academic adviser prior to enrollment in the course to determine if it fulfills a course for an emphasis area.

Additional coursework in Chemistry is recommended for students with the following emphasis areas or interests: Molecular, Cellular, and MicroBio; Organismal Biology; or Pre-Health Biological Sciences.