

Biology, Computational Biology (BSBio)

Total Hours Required: 120

Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

Course	Title	Hours
Year 1		
Semester 1		
M 408C	Differential and Integral Calculus	4
CH 301	Principles of Chemistry I	3
BIO 311C	Introductory Biology I	3
<u>First-Year Signature Course (090)</u>		3
Hours		13
Semester 2		
M 408S	Integral Calculus for Science	4
CH 302	Principles of Chemistry II	3
BIO 311D	Introductory Biology II	3
BIO 206L	Introductory Laboratory Experiments in Biology	2
RHE 306	Rhetoric and Writing	3
Hours		15
Semester 3		
<u>American and Texas Government (070)</u>		3
Hours		3
Year 2		
Semester 1		
CH 320M	Organic Chemistry I	3
BIO 325	Genetics	3
CH 204	Introduction to Chemical Practice	2
SDS 320E	Elements of Statistics	3
Free Elective		5
Hours		16
Semester 2		
CH 320N	Organic Chemistry II	3
CH 220C	Organic Chemistry Laboratory	2
INB 370	Evolution	3
Hours chosen from: upper-division BIO/INB/MBS		3
<u>Visual and Performing Arts (050)</u>		3
Hours		14
Semester 3		
<u>American and Texas Government (070)</u>		3
Hours		3
Year 3		
Semester 1		
PHY 302K	General Physics Technical Course: Mechanics, Heat, and Sound	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
Hours chosen from: upper-division CP BIO		3
Hours chosen from: upper-division CP BIO		3
<u>Humanities (040)</u>		
Free Elective		3
Hours		13
Semester 2		
PHY 302L	General Physics Technical Course: Electricity and Magnetism, Light, Atomic and Nuclear Physics	3
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
<u>Social and Behavioral Sciences (080)</u>		3

Hours chosen from: upper-division BIO/INB/MBS	3
Free Elective	3
Hours	13
Year 4	
Semester 1	
Hours chosen from: upper-division BIO/INB/MBS	3
Hours chosen from: upper-division BIO/INB/MBS	3
Hours chosen from: upper-division BIO/INB/MBS	3
Hours chosen from: upper-division BIO/INB/MBS Lab	3
<u>U.S. History (060)</u>	3
Hours	15
Semester 2	
Hours chosen from: upper-division BIO/INB/MBS	3
Hours chosen from: upper-division BIO/INB/MBS	3
Hours chosen from: upper-division BIO/INB/MBS	3
Free Elective	3
<u>U.S. History (060)</u>	3
Hours	15
Total Hours	120

Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy [General Education](#) requirements, including [Core Curriculum](#).

Code	Title	Hours
Concentration		
M 340L	Matrices and Matrix Calculations	3
or M 341	Linear Algebra and Matrix Theory	
M 362K	Probability I	3
or SDS 321	Introduction to Probability and Statistics	
SDS 322E	Elements of Data Science	3
Hours chosen from:		6
C S 303E	Elements of Computers and Programming	
C S 313E	Elements of Software Design	
C S 323E	Elements of Scientific Computing	
C S 323H	Elements of Scientific Computing: Honors	
C S 324E	Elements of Graphics and Visualization	
C S 326E	Elements of Networking	
C S 327E	Elements of Databases	
C S 329E	Advanced Topics in Elements of Computing	
M 408D	Sequences, Series, and Multivariable Calculus	
M 358K	Applied Statistics	
M 378K	Introduction to Mathematical Statistics	
SDS 326E	Elements of Statistical Machine Learning	
SDS 324E	Elements of Regression Analysis	
SDS 374C	Parallel Computing for Science and Engineering	
SDS 374E	Visualization and Data Analysis for Science and Engineering	
Hours chosen from: Genetics, Genomics, and Computational Biology		6
BCH 339N	Systems Biology and Bioinformatics	
INB 321G	Principles of Computational Biology	
MBS 325T	Human Genetics	
MBS 356E	Epigenetics and Epitranscriptomics	
MBS 327G	Genomics	
MBS 366	Microbial Genetics	
MBS 366R	Molecular Genetics and Medicine	

INB 471	Introduction to Systematics	
Hours chosen from:		6
Cellular, Development, and Molecular Biology:		
BCH 369	Fundamentals of Biochemistry	
	or BCH 339F Foundations of Biochemistry	
BCH 339J	Chemical and Synthetic Biology	
BCH 339M	Structure and Function of Molecular Machines	
BCH 364F	Astrobiology	
MBS 320	Cell Biology	
MBS 326R	General Microbiology	
MBS 330	Molecular Biology of Animal Viruses	
MBS 336	Tumor Biology	
MBS 355	Microbial Biochemistry	
MBS 339M	Bacterial Behavior and Signaling Mechanisms	
MBS 344	Molecular Biology	
MBS 360K	Immunology	
MBS 350	Developmental, Stem Cell, and Regenerative Biology	
MBS 350M	Plant Molecular Biology	
MBS 361	Human Infectious Diseases	
Physiology, Neuroscience, and Behavior:		
MBS 328	Introductory Plant Physiology	
INB 438L	Animal Communication	
INB 359K	Principles of Animal Behavior	
INB 361T	Comparative Animal Physiology	
MBS 367C	Cellular and Molecular Bases of Neural Development	
INB 365S	Human Systems Physiology	
INB 374	Plant Anatomy with Histological Techniques	
NEU 330	Neural Systems I	
MNS 355C	Physiology of Fishes	
Ecology, Evolution, and Biodiversity:		
INB 322	Structure, Physiology, and Reproduction of Seed Plants	
INB 323	Mathematical Modeling for Biology	
INB 324	Survey of the Plant Kingdom	
INB 346	Human Biology	
INB 351	Economic Botany	
INB 364	Microbial Ecology	
INB 471G	Natural History Museum Science	
INB 373	Ecology	
INB 375	Conservation Biology	
MNS 320	Marine Ecology	
MNS 352C	Estuarine Ecology	
MNS 352D	Marine Botany	
MNS 352E	Marine Conservation Biology	
MNS 353	Topics in Marine Science	
MNS 354	Marine Invertebrates	
MNS 354E	Aquatic Microbiology	
MNS 354Q	Marine Environmental Science	
MNS 356	Ecosystem Oceanography	
MNS 357	Marine Phytoplankton Diversity	
Additional laboratory course from the following:		1
MBS 320L	Cell Biology Laboratory	
INB 122L	Structure, Physiology, and Reproduction of Seed Plants Laboratory	
INB 124L	Survey of the Plant Kingdom Laboratory	
MBS 128L	Laboratory Experiments in Plant Physiology	
BIO 325L	Laboratory Experience in Genetics	
MBS 328D	Discovery Laboratory in Plant Biology	
MBS 230L	Virology Laboratory	
MBS 331L	Laboratory Studies in Molecular Biology	
INB 440L	Biology of Birds	
INB 446L	Human Microscopic and Gross Anatomy	
INB 448L	Invertebrate Biology	
MBS 349L	Experiments in Developmental Biology	
INB 453L	Entomology	
INB 354L	Ichthyology	
INB 455L	Vertebrate Natural History	
BIO 456L	Limnology and Oceanography	
MBS 260L	Immunology Laboratory	
MBS 361L	Clinical Bacteriology Laboratory	
INB 463L	Plant Systematics	
INB 165U	Human Systems Physiology Laboratory	
INB 369F	Field Herpetology	
INB 369L	Herpetology	
INB 371L	Experimental Physiology	
INB 373L	Ecology Laboratory	
INB 174L	Laboratory in Plant Anatomy and Histological Techniques	
INB 478L	Comparative Vertebrate Anatomy	
INB 359L	Animal Behavior Laboratory	
INB 470L	Evolution Laboratory	
MNS 120L	Laboratory Studies in Marine Ecology	
MNS 152L	Topics in Principles of Marine Science: Laboratory Studies	
Additional upper-division biochemistry, biology, chemistry, marine science, mathematics, physics, and statistics and data sciences		9
<i>Subtotal</i>		37
Degree (see details below)		34
Free electives: Additional coursework to reach total hours required.		13
<i>Subtotal</i>		47
General Education		
<u>Remaining Core Curriculum (42 hours total)</u>		36
<u>Foreign Language other than English, Beginning Proficiency</u>		
<i>Subtotal</i>		36
<u>College Requirements - Natural Sciences</u>		
<u>General University Requirements</u>		
Total Hours		120
Degree-Bachelor of Science Biology (BSBio)		
Code	Title	Hours
Hours chosen from:		4
M 408C	Differential and Integral Calculus	
M 408R	Differential and Integral Calculus for the Sciences	
M X08S & M X08N	Integral Calculus for Science and Differential Calculus for Science	
SDS 320E	Elements of Statistics	3
Hours chosen from:		3
CH 301	Principles of Chemistry I	

CH 301C	Foundations of Chemistry I	
CH 401	Principles of Chemistry I	
Hours chosen from:		3
CH 302	Principles of Chemistry II	
CH 302C	Foundations of Chemistry II	
CH 402	Principles of Chemistry II	
CH 204	Introduction to Chemical Practice	2
Hours chosen from a single sequence below:		8
Sequence 1		
PHY 317K	General Physics I	
PHY 117M	Laboratory for Physics 317K	
PHY 317L	General Physics II	
PHY 117N	Laboratory for Physics 317L	
Sequence 2		
PHY 301	Mechanics	
PHY 101L	Laboratory for Physics 301	
PHY 316	Electricity and Magnetism	
PHY 116L	Laboratory for Physics 316	
Sequence 3		
PHY 303K	Engineering Physics I	
PHY 103M	Laboratory for Physics 303K	
PHY 303L	Engineering Physics II	
PHY 103N	Laboratory for Physics 303L	
Sequence 4		
PHY 302K	General Physics Technical Course: Mechanics, Heat, and Sound	
PHY 102M	Laboratory for Physics 302K	
PHY 302L	General Physics Technical Course: Electricity and Magnetism, Light, Atomic and Nuclear Physics	
PHY 102N	Laboratory for Physics 302L	
Hours chosen from a single sequence below:		6
Sequence 1		
BIO 311C	Introductory Biology I	
BIO 311D	Introductory Biology II	
BIO 325	Genetics	
Sequence 2		
BIO 315H	Advanced Introduction to Genetics: Honors	
BIO 325H	Genetics: Honors	
BIO 206L	Introductory Laboratory Experiments in Biology	2
or INB 208L	Field Biology	
or MBS 226L	General Microbiology Laboratory	
INB 370	Evolution	3
All students must complete at least 36 semester hours of upper-division coursework; at least 21 semester hours of upper-division coursework in biology must be completed in residence at the University.		
Total Hours		34

To graduate under Biology Honors, students must remain in good standing in the [Dean's Scholars, Health Science Scholars, or Polymathic Scholars Honors Program](#), must submit an honors thesis, and present their research in an approved public forum, such as the college's annual Undergraduate Research Forum. More information about the Undergraduate Research Forum is available at <https://cns.utexas.edu/>.

Order and Choice of Work

Students begin the Bachelor of Science in Biology degree program with six hours of introductory biology for science majors (BIO 311C and BIO 311D), as well as CH 301 or CH 301C and CH 302 or CH 302C and M 408C, M 408N, or M 408R. Students should consult with academic advisors about specific concentrations within biology, about appropriate courses in mathematics and physical sciences, and about course load and the balance between laboratory and nonlaboratory work. Most students select a concentration by the end of the second year and take at least 21 hours of upper-division coursework in the major in the third and fourth years.

Additional Requirements and Policy

Students in all Options must fulfill both the University's [General Requirements](#) for graduation and the [college requirements](#). They must also earn a grade of at least C- in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in the *General Information Catalog*.