BA IN BIOLOGY

The Bachelor of Arts degree in Biology requires a minimum of 120 hours of coursework and provides students with a balance of liberal arts and cutting-edge knowledge in the biological sciences to prepare them for rewarding careers applying biological knowledge to solving real world problems. Because of its broad focus, the Bachelor of Arts degree is ideal preparation for careers such as biology educator, health-care specialist, laboratory technician, nutritionist, patent lawyer, regulatory affairs specialist, physician's assistant and many more.

Program includes:

- Biology, BA
- Biology-Neuroscience Concentration, BA

Biology, BA

Code	Title	Hours
UToledo Core Curriculum		36
UToledo Multicultural		6
College of NSM Degree Requirements		
NSM 1000	Foundations of Academic Success for Science and Math Majors	1
NSM 1500	Building a Career in Science and Math	1
One WAC course within the Program (3 cr hrs)		
Course Requirements for the BA Biology		
Required Biology courses:		
BIOL 2170	Fundamentals of Life Science: Biomolecules, Cells, and Inheritance	4
BIOL 2180	Fundamentals of Life Science Laboratory: Biomolecules, Cells, and Inheritance	1
BIOL 2150	Fundamentals Of Life Science: Diversity Of Life, Evolution And Adaptation	4
BIOL 2160	Fundamentals Of Life Science Laboratory: Diversity Of Life, Evolution And Adaptation	1
BIOL 3010	Molecular Genetics	3
BIOL 3030	Cell Biology	3
BIOL 3070	Human Physiology	3
BIOL 4700	Biological Literature And Communication ((WAC course))	3
Advanced elective Biology courses:		
An additional 11 hours of 3000- or 4000-level Biology courses		11
A maximum of 3 credit hours of BIOL 4910 not applied to Departmental Honors may be used to fulfill the advanced elective credits.		
Required Related courses:		
MATH 2600	Introduction To Statistics	3
or MATH 2640	Statistics for Applied Science	
or PSY 2100	Statistical Methods	
CHEM 1230	General Chemistry I	4
CHEM 1280	General Chemistry Lab I	1
CHEM 1240	General Chemistry II	4
CHEM 1290	General Chemistry Lab II	1
CHEM 2410	Organic Chemistry I	3
CHEM 2460	Organic Chemistry Laboratory I for Non-Majors	1
No classes used to satisfy the requirements of the BA Biology, including related courses, may be taken P/NC, with the exceptions of BIOL 4910, BIOL 4950, and BIOL 4990.		
Additional Certification:		26
The completion of the BA Biology major further recommends another major, minor(s), or certificate(s) in an area relevant to their chosen career. This additional certification must be approved by a Department Academic Advisor.		
Total Hours		**120**

Biology-Neuroscience Concentration, BA

For the B.A. degree in biology a minimum of 33 hours of BIOL courses are required.

The following courses must be included:
BIOL 2170 Fundamentals of Life Science: Biomolecules, Cells, and Inheritance
BIOL 2180 Fundamentals of Life Science Laboratory: Biomolecules, Cells, and Inheritance
BIOL 2150 Fundamentals Of Life Science: Diversity Of Life, Evolution And Adaptation
BIOL 2160 Fundamentals Of Life Science Laboratory: Diversity Of Life, Evolution And Adaptation
BIOL 3010 Molecular Genetics
BIOL 3030 Cell Biology
BIOL 3070 Human Physiology
BIOL 4700 Biological Literature and Communication

A minimum of eleven hours of advanced elective BIOL courses (3000 - 4000 level). A maximum of three credit hours of BIOL 4910 not applied to Departmental Honors may be used to fulfill the advanced elective credits.

The following related courses in mathematics, physics and chemistry are also required:

MATH 2600 Introduction To Statistics (or MATH 2640 or PSY 2100)
MATH 1320 & MATH 1330 College Algebra and Trigonometry (or MATH 1340 or (MATH 1750 and MATH 1760))

CHEM 1230 General Chemistry I
CHEM 1280 General Chemistry Lab I
CHEM 1240 General Chemistry II
CHEM 1290 General Chemistry Lab II
CHEM 2410 Organic Chemistry I
CHEM 2460 Organic Chemistry Laboratory I for Non-Majors
CHEM 2420 Organic Chemistry II
CHEM 2470 Organic Chemistry Laboratory II for Non-Majors

PHYS 2070 General Physics I and PHYS 2075 (or PHYS 2130 and PHYS 2135)
PHYS 2080 General Physics II and PHYS 2085 (or PHYS 2140 and PHYS 2145)

No classes used to satisfy the requirements of the Biology major may be taken P/NC with the exceptions of BIOL 4910, BIOL 4950, and BIOL 4990

Neuroscience Concentration: A concentration in neuroscience is available to students pursuing a BA in Biology. Students must apply the following courses towards their BA in Biology degree:

BIOL 2050 Fundamentals of Neuroscience I
BIOL 3050 Fundamentals of Neuroscience II
BIOL 4910 Undergraduate Research (in a section with a neuroscience focus)
BIOL 4700 Biological Literature And Communication (in a section with a neuroscience focus; usually offered only one semester a year)
PSY 3400 Cognitive Neuropsychology *or* PSY 3610 Behavioral Neuroscience *or* any BIOL/NSCI 4000 level course

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Biology, BA

Below is a sample plan of study. Consult your advisor and degree audit for your program requirements.

First Term		Hours
NSM 1000	Foundations of Academic Success for Science and Math Majors	1
ENGL 1110	College Composition I	3
CHEM 1230	General Chemistry I	4
CHEM 1280	General Chemistry Lab I	1
Arts/Humanities Core		3
MATH 1320 or MATH 1330	College Algebra or Trigonometry	3
	Hours	**15**
Second Term		
NSM 1500	Building a Career in Science and Math	1
BIOL 2170	Fundamentals of Life Science: Biomolecules, Cells, and Inheritance	4
BIOL 2180	Fundamentals of Life Science Laboratory: Biomolecules, Cells, and Inheritance	1
CHEM 1240	General Chemistry II	4
CHEM 1290	General Chemistry Lab II	1
ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
	Hours	**14**
Third Term		
BIOL 2150	Fundamentals Of Life Science: Diversity Of Life, Evolution And Adaptation	4
BIOL 2160	Fundamentals Of Life Science Laboratory: Diversity Of Life, Evolution And Adaptation	1
CHEM 2410	Organic Chemistry I	3
CHEM 2460	Organic Chemistry Laboratory I for Non-Majors	1
Arts and Humanities Core		3
Course in area of additional certification		3
	Hours	**15**
Fourth Term		
BIOL 3010	Molecular Genetics	3
Social Sciences Core		3
Courses in area of additional certification		9
	Hours	**15**
Fifth Term		
BIOL 3030	Cell Biology	3
Courses in area of additional certification		12
	Hours	**15**
Sixth Term		
BIOL 3070	Human Physiology	3
Diversity of US		3
Courses in area of additional certification or electives		7
Social Science Core		3
	Hours	**16**
Seventh Term		
MATH 2600 or MATH 2640	Introduction To Statistics or Statistics for Applied Science	3
BIOL 3000-4000 Level Electives		6
Non-US Diversity		3
Course in area of additional certification		3
	Hours	**15**
Eighth Term		
BIOL 4700	Biological Literature And Communication (WAC)	3
BIOL 3000-4000 Level Elective		6
Course in area of additional certification or electives		6
	Hours	**15**
	Total Hours	**120**

Biology-Neuroscience Concentration, BA

Below is a sample plan of study. Consult your degree audit for your program requirements.

First Term		Hours
NSM 1000	Foundations of Academic Success for Science and Math Majors	2
ENGL 1110	College Composition I	3
CHEM 1230	General Chemistry I	4
CHEM 1280	General Chemistry Lab I	1
MATH 1320	College Algebra	3
Arts/Humanities Core		3
	Hours	**16**
Second Term		
BIOL 2170	Fundamentals of Life Science: Biomolecules, Cells, and Inheritance	4
BIOL 2180	Fundamentals of Life Science Laboratory: Biomolecules, Cells, and Inheritance	1
CHEM 1240	General Chemistry II	4
CHEM 1290	General Chemistry Lab II	1
MATH 1330	Trigonometry	3

ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
	Hours	**16**
Third Term		
BIOL 2150	Fundamentals Of Life Science: Diversity Of Life, Evolution And Adaptation	4
BIOL 2160	Fundamentals Of Life Science Laboratory: Diversity Of Life, Evolution And Adaptation	1
CHEM 2410	Organic Chemistry I	3
CHEM 2460	Organic Chemistry Laboratory I for Non-Majors	1
Elective		3
Social Sciences Core (PSY1010)		3
	Hours	**15**
Fourth Term		
BIOL 3010	Molecular Genetics	3
CHEM 2420	Organic Chemistry II	3
CHEM 2470	Organic Chemistry Laboratory II for Non-Majors	1
Elective		5
Arts/Humanities Core & Diversity of US (talk with advisor about options)		3
	Hours	**15**
Fifth Term		
BIOL 3030	Cell Biology	3
PHYS 2070	General Physics I	4
PHYS 2075	General Physics I - Lab	1
Elective		3
Social Sciernces Core		3
	Hours	**14**
Sixth Term		
BIOL 3070	Human Physiology	3
PHYS 2080	General Physics II	4
PHYS 2085	General Physics II - Lab	1
Elective		3
BIOL 2050	Fundamentals of Neuroscience I	3
	Hours	**14**
Seventh Term		
MATH 2600 or MATH 2640	Introduction To Statistics or Statistics for Applied Science	3
BIOL 3050	Fundamentals of Neuroscience II	3
PSY 3400	Cognitive Neuropsychology	3
BIOL 3XXX-4XXX Level Elective		3
Elective		3
	Hours	**15**
Eighth Term		
BIOL 4700	Biological Literature And Communication (WAC; in a section with a neuroscience focus)	3
BIOL 4910	Undergraduate Research (in a lab with a neuroscience focus)	3
BIOL 3XXX-4XXX Level Elective		3
Elective		3
Non-US Diversity		3
	Hours	**15**
	Total Hours	**120**

- PLO 1. Students will demonstrate a thorough understanding of fundamental concepts of cell and molecular biology, chemistry, biochemistry, evolutionary biology, and physiology.
- PLO 2. Students will demonstrate a thorough understanding of fundamental concepts in a second area of specialization (certificate or minor) of their own choosing.
- PLO 3. Students will demonstrate the ability to use fundamental concepts of biological science to analyze and evaluate biological observations.
- PLO 4. Students will act effectively as a member of a team.
- PLO 5. Students will understand and comply with ethical behavior in coursework, research, and the use of biological information.
- PLO 6. Students will be able to explain, evaluate, and effectively interpret claims, theories, and assumptions in the Biological Sciences, including those presented in the scientific literature. Students will be able to communicate scientific arguments and ideas clearly and explicitly through writing and speech.
- PLO 7. Students will be able to perform effective primary literature searches and identify relevant primary literature. (Specialized knowledge)
- PLO 8. Students will demonstrate the ability to incorporate diverse view and perspectives.
- PLO 9. Students will demonstrate competence in cultural diversity.