

BIOLOGY B.S.

A degree in Biology is versatile and opens up many opportunities. A Biology degree provides a strong foundation in the natural sciences, and also prepares students for various careers such as lab technician at a research or medical institution, pharmaceutical or medical sales representative, or work in research and development for a biotech or a company.

Additionally, our Biology B.S. program satisfies the admission requirements of medical, dental, veterinary, physical therapy, pharmacy, and chiropractic schools, and provides a sound preparation for many graduate programs in the sciences.

The Biology B.S. degree requires a total of 44 hours in biology and 28 hours in related fields (chemistry, mathematics, and physics). It is expected that courses that have accompanying laboratory sections will be completed along with the lecture section. All Biology B.S. students must complete an internship, research project, or service-learning project, which is built into the BIO-499 Capstone Experience course.

Pre-Medical/Pre-Dental/Pre-Veterinary/Pre-Health

Students interested in attending medical school, dental school, veterinary school, or other health programs should refer to the Pre-Medical/Pre-Dental/Pre-Veterinary/Pre-Health Advising Track (<https://catalog.dyouville.edu/degree-programs/arts-sciences-education/pre-med/>) page for more details.

Pre-Physical Therapy: Biology B.S./Doctor of Physical Therapy (D.P.T.)

Students interested in a degree in Physical Therapy at D'Youville will matriculate into a sequential-degree program: B.S. in Biology + Doctor of Physical Therapy (D.P.T.) program (7 years). Entering freshmen matriculate into and complete a B.S. in Biology degree under the program administration of the Department of Natural Sciences and Mathematics. Upon completion of the B.S. in Biology, qualified graduate students then move directly into the 3-year Doctor of Physical Therapy program (D.P.T.). Refer to the Physical Therapy (<https://catalog.dyouville.edu/degree-programs/health-professions/wellness-and-rehabilitation-division/physical-therapy/physical-therapy-bs-dpt/>) page for more details.

Pre-Chiropractic: Biology B.A. or B.S./Doctor of Chiropractic (D.C.)

Students interested in a Chiropractic degree at D'Youville will matriculate into a sequential-degree program: B.A. in Biology + Doctor of Chiropractic (D.C.) program (6.5 or 7.5 years), or B.S. in Biology + Doctor of Chiropractic (D.C.) program (7.5 years). Entering freshmen matriculate into and complete the undergraduate Biology degree under the program administration of the Department of Natural Sciences and Mathematics. Upon completion of the B.A. or B.S. in Biology, qualified graduate students then move directly into the 3.5-year Doctor of Chiropractic program (D.C.). Refer to the Chiropractic (<https://catalog.dyouville.edu/degree-programs/health-professions/wellness-and-rehabilitation-division/chiropractic-department/chiropractic-dc/>) page for more details.

Students within the Biology B.S. program must maintain a minimum 2.0 G.P.A. in courses taken at D'Youville in coursework required for their major. Students who fail to earn this G.P.A. will be placed on probation in the major. Probation may continue for a maximum of three consecutive semesters or a total of four non-consecutive semesters. Students who exceed these limits will be dismissed from the major. Students may

appeal these decisions on academic status by submitting, in writing, to the department chairperson, reasons why exceptional consideration may be justified.

If a student is dismissed from the Biology B.S. program due to poor performance in courses not required for the B.A. program, a student may have their record re-evaluated as a major in the B.A. program, and may be declared in good standing if their performance in the B.A. requirements justifies this.

Pre-Medical/Pre-Dental/Pre-Veterinary/Pre-Health

This program offers motivated students the option to register for courses to fulfill the prerequisites for application to most medical, dental, veterinarian, and health-profession schools. The science emphasis includes two semesters of introductory biology, general chemistry, organic chemistry, and physics, and one semester of calculus. Students interested in attending medical school, dental school, veterinary school, or other health programs should refer to the Pre-Medical/Pre-Dental/Pre-Veterinary/Pre-Health Advising Track (<https://catalog.dyouville.edu/degree-programs/arts-sciences-education/pre-med/>) page for more details.

Pre-Physical Therapy: Biology B.S./Doctor of Physical Therapy (D.P.T.)

Students choosing the sequential degree entry will complete their B.S. in Biology and move directly into the graduate D.P.T. program provided they complete all P.T. program prerequisites at a grade of B or better with a minimum prerequisite course G.P.A. of 3.20 as well as a cumulative G.P.A. of 3.0 and continue to meet all graduate admissions standards.

In addition to the courses required for the Biology B.S., students interested in Physical Therapy should also complete SOC-101, PSY-101, HP-203, BIO-107/L, BIO-108/L, and CHE-220/L (note: BIO-107 and BIO-108 lectures will substitute for the Biology B.S. requirement of BIO-305).

Refer to the Physical Therapy (<https://catalog.dyouville.edu/degree-programs/health-professions/wellness-and-rehabilitation-division/physical-therapy/physical-therapy-bs-dpt/>) page for more details.

Pre-Chiropractic: Biology B.A. or B.S./Doctor of Chiropractic (D.C.)

Students choosing the sequential degree entry will complete their B.A. or B.S. in Biology and move directly into the graduate D.C. program provided they complete all Chiropractic program prerequisites at a grade of C or better and continue to meet all graduate admissions standards. Refer to the Chiropractic (<https://catalog.dyouville.edu/degree-programs/health-professions/wellness-and-rehabilitation-division/chiropractic-department/chiropractic-dc/>) page for more details.

Course Requirements Biology B.S.

Code	Title	Credits
	General Education Requirements	30
	Major Requirements	72
	Free electives (including remaining Liberal Arts and Sciences Requirements)	18
Total Credits		120

**Course Requirements for the Biology B.S. Major
In the Specific Areas of Concentration**

Code	Title	Credits
BIO-101	Introductory Biology I	4
BIO-101L	Intro Bio Lab I	0
BIO-102	Introductory Biology II	4
BIO-102L	Intro Bio Lab II	0
BIO-110	Biology Seminar 1	1
BIO-205	Biodiversity I, Microbes, Protists, and Plants	4
BIO-205L	Biodiversity I, Microbes, Protists, and Plants Lab	0
BIO-206	Biodiversity II	4
BIO-206L	Biodiversity II Lab	0
BIO-300	Biology Seminar 2	1
BIO-302	Genetics	4
BIO-302L	Genetics Lab	0
BIO-303	Biochemistry ¹	3
BIO-303L	Biochemistry Lab ¹	1
BIO-305	Human Physiology ³	3
BIO-306	Ecology, Evolution & Behavior	4
BIO-306L	Ecology, Evolution & Behavior Lab	0
BIO-312	Molecular Cell Biology	4
BIO-499	Capstone Experience ²	3
Total Credits		40

¹ Denotes specific prerequisite coursework requiring a minimum grade of B and a G.P.A. of 3.20 to enter the D.P.T. graduate program. Of the four chemistry courses, only the best two must be considered for the prerequisite G.P.A.

² Capstone credits (3) are already counted under the General Education requirements.

³ Human Physiology (BIO-305) can be substituted by one of the two following 6-credit sequences: either Human Anatomy & Physiology I (BIO-107) and Human Anatomy & Physiology II (BIO-108) or Advanced Physiology I (BIO-659) and Advanced Physiology II (BIO-660).

Biology Electives Chosen from (4 credits)

Code	Title	Credits
BIO-217	Animal Handling	3
BIO-217L	Animal Handling Lab	1
BIO-230	Foundations of Environmental Science	4
BIO-230L	Foundations of Environmental Science	0
BIO-304	Microscopic Anatomy	4
BIO-304L	Microscopic Anatomy Lab	0
BIO-309	Virology	3
BIO-317	Comparative Anatomy	4
BIO-317L	Comparative Anatomy Lab	0
BIO-320	Developmental Biology	4
BIO-320L	Dev Biology Lab	0
BIO-332	Environmental Health	3
BIO-350	Fundamentals of Genomics, Proteomics & Bioinformatics	3
BIO-350L	Fundamentals Genomics, Proteomics and Bioinformatics Lab	0
BIO-389	Special Topics	3-4
BIO-389L	Special Topics Lab	1

BIO-390	Special Topics	3-4
BIO-407	Research at D'Youville	1-3
BIO-408	Research At DYC	1-3
BIO-479	Independent Study	1-3
BIO-480	Independent Study	1-3
BIO-505	Neurobiology	4
BIO-505L	Neurobiology Lab	0
BIO-610	Immunology	3
BIO-639	Human Gross Anatomy	6
BIO-639L	Human Gross Anatomy Lab	0
BIO-639XD	Human Gross Anatomy Extra Dissection Lab	0
BIO-659	Advanced Physiology I	3
BIO-660	Advanced Physiology II	3

In Other Academic Areas Required for the Major

Code	Title	Credits
CHE-101	General Chemistry I ¹	3
CHE-101L	General Chemistry Laboratory ¹	1
CHE-102	General Chemistry II ¹	3
CHE-102L	General Chemistry Laboratory II ¹	1
CHE-219	Organic Chemistry ¹	3
or CHE-209	Principles of Organic Chemistry	
CHE-219L	Organic Chemistry Lab ¹	1
or CHE-209L	Principles of Organic Chemistry Lab	
MAT-102L	Mathematics in Biology: Models, Data and Relations	1
MAT-125	Calculus I	4
MAT-201	Biostatistics ²	3
PHY-101	General Physics I ¹	3
or PHY-111	Introduction to Physics	
PHY-101L	Gen Physics Lab I ¹	1
or PHY-111L	Introduction to Physics Lab	
PHY-102	General Physics II ¹	3
or PHY-112	Introduction to Physics	
PHY-102L	Gen Physics Lab II ¹	1
or PHY-112L	Introduction to Physics Lab	
Total Credits		28

¹ Denotes specific prerequisite coursework requiring a minimum grade of B and a G.P.A. of 3.20 to enter the D.P.T. graduate program. Of the four chemistry courses, only the best two must be considered for the prerequisite G.P.A. Pre-professional (pre-med and pre-dent) need to take Organic Chemistry (CHE-219) and lab followed by Organic Chemistry II (CHE-220) and lab as required by most medical schools.

² The statistics requirement can also be satisfied by MAT-123.

**Course Requirements for the Biology B.S. Major for
Health Professions Preparation (D.P.T)**

Code	Title	Credits
	General Education Requirements	30
	Major Biology B.S. and D.P.T. preparation	71
	Health Professions option (D.P.T.)	13

Free electives (including remaining Liberal Arts and Sciences Requirements)	6
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Total Credits **120**

Course Requirements for the Biology B.S. Major (Pre DPT)

Code	Title	Credits
BIO-101	Introductory Biology I	4
BIO-101L	Intro Bio Lab I	0
BIO-102	Introductory Biology II	4
BIO-102L	Intro Bio Lab II	0
BIO-107	Human Anatomy & Physiology I ^{1,2}	3
BIO-108	Human Anatomy & Physiology II ^{1,2}	3
MAT-102	Mathematics in Biology: Models, Data and Relations	1
MAT-201	Biostatistics ¹	3
BIO-110	Biology Seminar 1	1
BIO-205	Biodiversity I, Microbes, Protists, and Plants	4
BIO-205L	Biodiversity I, Microbes, Protists, and Plants Lab	0
BIO-206	Biodiversity II	4
BIO-206L	Biodiversity II Lab	0
BIO-300	Biology Seminar 2	1
BIO-302	Genetics	4
BIO-302L	Genetics Lab	0
BIO-303	Biochemistry	3
BIO-303L	Biochemistry Lab	1
BIO-306	Ecology, Evolution & Behavior	4
BIO-306L	Ecology, Evolution & Behavior Lab	0
BIO-312	Molecular Cell Biology	4
BIO-499	Capstone Experience ³	1
MAT-125	Calculus I	4
PHY-101	General Physics I	3
or PHY-111	Introduction to Physics	
PHY-101L	Gen Physics Lab I	1
or PHY-111L	Introduction to Physics Lab	
PHY-102	General Physics II	3
or PHY-112	Introduction to Physics	
PHY-102L	Gen Physics Lab II	1
or PHY-112L	Introduction to Physics Lab	
CHE-101	General Chemistry I	3
CHE-101L	General Chemistry Laboratory	1
CHE-102	General Chemistry II	3
CHE-102L	General Chemistry Laboratory II	1
CHE-219	Organic Chemistry	3
CHE-219L	Organic Chemistry Lab	1
Total Credits		69

¹ Denotes specific prerequisite coursework requiring a minimum grade of B and a G.P.A. of 3.20 to enter the D.P.T. graduate program. Of the four chemistry courses, only the best two must be considered for the prerequisite G.P.A.

² In the BIO-BS for pre-health, Human Anatomy & Physiology I (BIO-107) and Human Anatomy & Physiology II (BIO-108) substitute for Human Physiology (BIO-305).

³ Capstone Experience Credits (3) already counted under General Education Requirements.

In Other Academic Areas Required for the Major for DPT

Code	Title	Credits
SOC-101	Principles of Sociology ¹	3
PSY-101	General Psychology ¹	3
HP-203	Medical Terminology	1
BIO-107L	Human Anatomy & Physiology Laboratory	1
BIO-108L	Human Anatomy & Physiology II Lab	1
CHE-220	Organic Chemistry II	3
CHE-220L	Organic Chemistry II Lab	1
Total Credits		13

¹ Denotes specific prerequisite coursework requiring a minimum grade of B and a G.P.A. of 3.20 to enter the D.P.T. graduate program. Of the four chemistry courses, only the best two must be considered for the prerequisite G.P.A.

Admission into the B.S. in Biology requires 1) three years of high school Math, English, History, and Science, 2) a high school average of 85% or a 3.0 on a four-point scale or a transfer G.P.A. of 2.5, and, 3) a high school science G.P.A. above 80%. The same admissions requirements exist for the Biology B.S. pre-Medical/pre-Dental/pre-Veterinary/pre-Health and pre-Chiropractic tracks. Admission into the Biology B.S./Physical Therapy (D.P.T.) track has the same admissions requirements, but a transfer G.P.A. of 3.0 is required.

Students nearly meeting these requirements will be considered for these programs by the department. Students denied immediate acceptance into the Biology B.S. will be accepted into the Biology B.A. program if they meet its requirements. These students may be promoted into the Biology B.S. program after they have sufficiently demonstrated competence (usually after the completion of two semesters).

The B.S. in Biology allows graduates to the workforce as lab technicians, medical or pharmaceutical sale representatives, and high school educators (an education masters might be required for the latter). In addition, this major is excellent for students preparing for graduate school as well as for professional programs in medicine, veterinary medicine, dentistry, physician assistant, physical therapy, podiatry, optometry, chiropractic, and pharmacology.