

# Biology - B.A.

## Curriculum

The Bachelor of Arts degree program in Biology at Johnson & Wales offers a comprehensive exploration of biology, providing students with a strong foundation in fundamental principles while also allowing for flexibility and interdisciplinary study. Through a combination of rigorous coursework, hands-on laboratory experiences, and research and fieldwork opportunities, students in our program develop critical thinking skills, scientific literacy and a deep understanding of the living world. Interdisciplinary course selections allow students to tailor the program to their career of interest, including careers in bioinformatics, computational biology, science communication, healthcare administration, and business management.

Upon completion of the program, graduates are expected to:

- Understand and apply the fundamental biological concepts of evolution, structure and function, information exchange and storage, and transformation of energy and matter to explain biological systems from molecules to communities.
- Communicate scientific information using oral and written arguments and visual presentation.
- Identify, evaluate and analyze scientific information.
- Apply the scientific method and critical thinking skills to address scientific questions.
- Apply mathematical and computational skills and interdisciplinary concepts and knowledge to interpret biological phenomena.
- Recognize ethical concerns pertaining to biological science and apply ethical practice in the scientific process.
- Evaluate the influence that biological science has on society, including the historical context of major findings in modern biology.

## Biology

A four-year program leading to the bachelor of arts degree

### Major Courses

BIO1022	General Biology - Organismal	3
BIO1026	General Biology Laboratory - Organismal	1
BIO3040	Molecular Biology	3
BIO3046	Molecular Biology Laboratory	1
BIO3100	Coastal Ecology	3
BIO3106	Coastal Ecology Laboratory	1
BIO4020	Integrative Biology	3
BIO4026	Integrative Biology Laboratory	1
BIO4100	Senior Seminar in Biology	3

### Major Electives

Choose 18-20 credits of the following (at least two courses must be at 3000 level or higher): 18-20

BIO1030 & BIO1036	Plant Cultivation I: Soil, Soil Substitutes and Disease Management and Plant Cultivation I: Soil, Soil Substitutes and Disease Management Laboratory	3
BIO2003 & BIO2006	Human Anatomy and Physiology I and Human Anatomy and Physiology I Laboratory	3
BIO2013 & BIO2016	Human Anatomy and Physiology II and Human Anatomy and Physiology II Laboratory	3
BIO2201 & BIO2206	General Microbiology and General Microbiology Laboratory	3
BIO3070	Evolution	3
BIO3080	Epigenetics	3
BIO3400	Fundamentals of Pharmacology	3
BIO3510 & BIO3516	Plant Cultivation II: Hydroponics, Aquaponics, Tissue Culture, Genetics and Extraction and Plant Cultivation II: Hydroponics, Aquaponics, Tissue Culture, Genetics and Extraction Laboratory	3
BIO3620 & BIO3626	Comparative Vertebrate Anatomy and Comparative Vertebrate Anatomy Laboratory	3
BIO4030	Advanced Anatomy	3
BIO4040 & BIO4046	Functional Histology and Functional Histology Laboratory	3
BIO4070	Fundamentals of Immunology	3
BIO4510 & BIO4516	Applications of Plants & Fungi and Applications of Plants & Fungi Laboratory	3
CHM3200	Analytical Chemistry	3
SCI3020	Sustainability Policy and Planning	3

SCI3070	Food Sustainability	3
SCI3080	The Business of Sustainability	3
SCI4090	Research Seminar in Sustainability	3

### Applied/Experiential Learning

Choose 6 credits from the following:		6
ASCI4799	College of Arts & Sciences Internship <sup>1c</sup>	6
RSCH3810	Undergraduate Laboratory and Field Research	3
RSCH3830	Undergraduate Research Experience	3
RSCH4020	Honors Directed Academic Experience	3
Study Abroad <sup>5a</sup>		

### Related Professional Studies

CHM1011	General Chemistry I	3
CHM1016	General Chemistry I Laboratory	1
CHM1022	General Chemistry II	3
CHM1026	General Chemistry II Laboratory	1
Interdisciplinary Studies: Choose 12 credits from the following: *		12

Bioinformatics/Computational Biology		
CSIS1101	Computer Science I	3
CSIS1112	Computer Science II	3
CSIS2018	Advanced Data Structures	3
CSIS2023	Survey of Programming Languages	3
Science Communication		
MCOM1005	Introduction to Media & Communication	3
MCOM2010	Media Industries	3
MCOM2550	Introduction to Multimedia Storytelling	3
MCOM3090	Critical Perspectives on New Media	3
Biotechnology/Pharmaceutical Management		
BUSN1001	Introduction to Business and Management	3
MGMT2030	Operations and Supply Chain Management I	3
MRKT1001	Marketing Foundations	3
MRKT3050	Sales Management	3
Healthcare Administration		
HSC1230	Introduction to Public Health	3
HSC2310	Introduction to Healthcare in the United States	3
HSC2330	Healthcare Organizational Theory and Management	3
HSC3410	Quality Improvement in Healthcare Organizations	3

### A&S Core Experience

Communicating		9
ENG1020	Rhetoric & Composition I	3
ENG1021	Rhetoric & Composition II	3
ENG1030	Communication Skills	3
Connecting		6
Two courses with the Connecting attribute (ECNG), one at the 2000 level, one at the 4000 level		
Experiencing		6
PHIL3240	Ethics: A Global Perspective	3
Additional course with the Experiencing attribute (EEXP) in a different discipline		
Measuring		6
MATH1030	Precalculus (or higher, based on student's placement) **	3
MATH2010	Introduction to Biostatistics	3
Exploring		4
BIO1011 & BIO1016	General Biology - Cellular and General Biology Laboratory - Cellular	4
Interacting		6
PSYC1001	Introductory Psychology	3
Additional course with the Interacting attribute (EINT) in a different discipline		
A&S Electives		6
BIO2001	Genetics	3
Additional course with the Arts & Sciences elective attribute (EASC)		

### Free Electives #

15-16 credits selected from 1000-4999 numbered offerings within the university 15-16

**Total Credits 121.0-124.0**

\* Students are responsible for meeting prerequisites.

\*\* Students that do not place in MATH1030 Precalculus, will need to take an extra course, MATH1020 Fundamentals of Algebra, as a prerequisite. If needed this will count as an A&S elective.

<sup>1c</sup>Typically, internships require a minimum of six credits. Students interested in a 9 or 12-credit internship can apply additional experiential learning and

free elective credits, if available. Students are strongly encouraged to contact a faculty advisor before scheduling internship and free elective credits.

<sup>Sa</sup>To be eligible to count toward Applied/Experiential Learning, a Study Abroad offering must meet certain requirements. Contact Experiential Education & Career Services to discuss eligible Study Abroad options for this degree program and visit the study abroad website for information, program descriptions and online applications.

# In addition to classes, free elective credits may be applied to a number of options such as internship, study abroad, and courses in a specialization or minor as relevant. For students who qualify for the J2 program, up to four graduate courses may apply. Students are strongly encouraged to contact a faculty advisor before scheduling free elective credits.

Note: Students must pass MATH0010 Pre-Algebra or have equivalent placement scores to enroll in required math courses.

Note: Students must pass ENG0001 Writing Workshop or have equivalent placement scores to enroll in ILS 2000-level courses.

## Admissions Requirements

Johnson & Wales University holistically reviews all elements of a student's application to identify those students most likely to succeed at the university.

For first-year applicants, a completed application and high school transcript(s) are required. For transfer applicants, a completed application and high school and/or college transcript(s) are required. Completion of optional materials is encouraged.

Successful candidates for first year admission have taken a high school, college preparatory academic program including English, mathematics, science, social science and foreign language. Admissions decisions may also consider individual experiences and particular circumstances unique to each student. Other considerations are made based upon recommendations, writing ability and extracurricular activities.

Visiting campus, both in-person or virtually, is a valuable way of assuring that JWU is the right university for you.

## Accelerated Program Options

### J2 Program

The JWU J2 program allows qualified students enrolled in a matriculating undergraduate program to take graduate level courses at JWU. Students interested in pursuing this option should meet with their academic advisor to discuss their interest, qualifications and plans. The undergraduate student may take up to four graduate courses (maximum 12 credits) and are limited to 6 credits a semester and 3 credits per session (Fall Session I and Fall Session II).

The completion of graduate credits to fulfill undergraduate program requirements does not guarantee acceptance into the graduate program after completion of the baccalaureate degree. Matriculating undergraduate students who wish to formally enroll in a graduate program must fulfill all requirements for entrance into the intended graduate program and complete a graduate program application.

**Note:** Not all graduate courses are included as part of this policy. Courses offered as part of the Master of Arts in Teaching, Master of Education, Master of Science in Physician Assistant Studies and doctoral courses are excluded from this policy and are restricted to program majors only. Additional courses and/or programs as determined by individual colleges may also have restricted access.

### Eligibility Criteria

To be eligible to enroll in graduate-level courses (excludes: Master of Arts in Teaching, Master of Education, Master of Science in Physician Assistant Studies, doctoral courses, Counseling graduate program courses, and other programs as outlined by the colleges), undergraduate students must meet the following criteria:

- Undergraduate cumulative GPA of 3.00 or higher
- Completed and registered undergraduate credits at least 90 credits
- Meet the individual course prerequisites

### Appeal to Eligibility Criteria

College dean or designee will receive a copy of the Petition Form, Student's GPS and email requesting appeal if the student requests to appeal the GPA or earned/registered credit criteria. College dean/designee will review and determine approval.

These courses carry graduate credit and will replace undergraduate degree requirements when applicable, traditionally free-electives (maximum of 12 credits). The course will be applied to the undergraduate degree in the order in which they are taken (if required) and will also be applied towards both the students undergraduate and graduate GPA.

Students should maintain enrollment in at least 12 credits of undergraduate coursework to maintain full-time status; graduate course enrollment is not calculated into undergraduate full-time status. For students already attending full-time as undergraduates (12 credits or more) and paying the full-time tuition, the graduate credits will be included in full-time tuition fee. Students attending part-time (11 credits or less) will pay the cost per-credit undergraduate tuition for the graduate course.

Course registration will be based on space availability and students enrolled in graduate level courses will be required to maintain good academic standing at the undergraduate and graduate level.