

CELL AND MOLECULAR BIOLOGY (BS)

Exploration and Discovery

The BS in Cell and Molecular Biology prepares students for graduate studies or work in biomedical fields. Laboratory experiences include opportunities for students to conduct original research working closely with a faculty mentor. This degree is also appropriate for professional schools including medical, dental, and veterinary schools. Note that some professional/graduate schools require a full year of physics. Students should work closely with their academic advisor to plan their coursework.

Degree Requirements

| Course | Title | Credits |
|--|---|---------|
| Major Requirements | | |
| BI 1110 | Biological Science I (TECO) | 4 |
| BI 1120 | Biological Science II | 4 |
| BI 2110 | Human Anatomy and Physiology I | 3 |
| BI 2120 | Human Anatomy and Physiology II | 3 |
| BI 2130 | Human Anatomy and Physiology Laboratory I | 1 |
| BI 2140 | Human Anatomy and Physiology Laboratory II | 1 |
| BI 3040 | Microbiology | 4 |
| BI 3060 | Genetics | 4 |
| BI 3130 | Evolution | 4 |
| BI 3240 | Conservation (DICO,GACO,INCO) | 3 |
| BI 4100 | Cell Structure and Function | 4 |
| BI 4188 | Molecular Biology | 4 |
| BI 4970 | Biology Seminar | 1 |
| CH 1050 | Laboratory Safety | 1 |
| CH 2335 | General Chemistry I (QRCO) | 4 |
| CH 2340 | General Chemistry II | 4 |
| CH 3370 | Organic Chemistry I | 4 |
| CH 3380 | Organic Chemistry II | 4 |
| Upper Level Cell and Molecular Biology Electives | | |
| Complete three courses from the following: ¹ | | 12 |
| BI/CH 3035 | Biochemistry I (INCO) | |
| BI 4150 | Developmental Biology (WRCO) | |
| BI 4770 | Animal Physiology (WRCO) | |
| BI 4780 | Neurobiology (WRCO) | |
| BI 4950 | Undergraduate Research | |
| CH 4025 | Biochemistry II | |
| Physics | | |
| PH 2410 & PH 2430 or PH 2130 | University Physics I and University Physics Laboratory I or Physics I | 4 |
| Mathematics Foundations | | |
| MA 2490 or MA 2550 | Applied Calculus I (QRCO) or Calculus I (QRCO) | 4 |
| General Education (https://coursecatalog.plymouth.edu/general-education) | | |
| EN 1400 | Composition | 4 |

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|--|---|-----|
| IS 1111 | The First Year Seminar: Critical Thinking and the Nature of Inquiry | 3 |
| CTDI | Creative Thought Direction | 3-4 |
| PPDI | Past and Present Direction | 3-4 |
| SSDI | Self and Society Direction | 3-4 |
| Directions (choose from CTDI, PPDI, SSDI) ² | | 4-8 |
| WECO | Wellness Connection | 3-4 |
| Electives | | 16 |
| Total Credits | | 120 |

¹ One course must be Research Intensive (Developmental Biology (BI 4150), Neurobiology (BI 4780), or Undergraduate Research (BI 4950)); one course must be a Writing in the Discipline Connection (WRCO) (Developmental Biology (BI 4150), Animal Physiology (BI 4770), Neurobiology (BI 4780))

² Directions should total 16-17 credits because SIDI is waived for BS Cell and Molecular Biology.

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

| Course | Title | Credits |
|--|--|---------|
| Year One | | |
| EN 1400 | Composition | 4 |
| IS 1111 | The First Year Seminar: Critical Thinking and the Nature of Inquiry | 3 |
| Complete one Mathematics Foundations Course from the following: | | 4 |
| MA 2490 or MA 2550 | Applied Calculus I (QRCO) or Calculus I (QRCO) | |
| BI 1110 | Biological Science I (TECO) | 4 |
| BI 1120 | Biological Science II | 4 |
| CH 1050 | Laboratory Safety | 1 |
| CH 2335 | General Chemistry I (QRCO) ¹ | 4 |
| CH 2340 | General Chemistry II ¹ | 4 |
| Elective | | 2 |
| Credits | | 30 |
| Year Two | | |
| BI 2110 & BI 2130 | Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I | 4 |
| BI 2120 & BI 2140 | Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II | 4 |
| CH 3370 | Organic Chemistry I | 4 |
| CH 3380 | Organic Chemistry II | 4 |
| PPDI (https://coursecatalog.plymouth.edu/general-education/#PPDI) | Past and Present Direction | 3-4 |
| SSDI (https://coursecatalog.plymouth.edu/general-education/#SSDI) | Self and Society Direction | 3-4 |

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| Directions (choose from CTDI, PPDI, SSDI) (https://coursecatalog.plymouth.edu/general-education) ² | 4-8 |
| Credits | 26-32 |
| Year Three | |
| BI 3040 | Microbiology 4 |
| BI 3060 | Genetics 4 |
| BI 3240 | Conservation (DICO,GACO,INCO) 3 |
| BI 4100 | Cell Structure and Function 4 |
| Complete one Upper Level Cell and Molecular Biology Elective from the following: | 4 |
| BI/CH 3035 | Biochemistry I (INCO) |
| BI 4150 | Developmental Biology (WRCO) |
| BI 4770 | Animal Physiology (WRCO) |
| BI 4780 | Neurobiology (WRCO) |
| BI 4950 | Undergraduate Research |
| CH 4025 | Biochemistry II |
| Complete one Physics Course from the following: | 4 |
| PH 2410 & PH 2430 or PH 2130 | University Physics I or Physics I |
| CTDI (https://coursecatalog.plymouth.edu/general-education/#CTDI) | Creative Thought Direction 3-4 |
| Electives | 3-4 |
| Credits | 29-31 |
| Year Four | |
| BI 3130 | Evolution 4 |
| BI 4188 | Molecular Biology 4 |
| BI 4970 | Biology Seminar 1 |
| Complete two Upper Level Cell and Molecular Biology Electives from the following: | 8 |
| BI/CH 3035 | Biochemistry I (INCO) |
| BI 4150 | Developmental Biology (WRCO) |
| BI 4770 | Animal Physiology (WRCO) |
| BI 4780 | Neurobiology (WRCO) |
| BI 4950 | Undergraduate Research |
| CH 4025 | Biochemistry II |
| WECO (https://coursecatalog.plymouth.edu/general-education/#WECO) | Wellness Connection 3-4 |
| Electives | 10-11 |
| Credits | 30-32 |
| Total Credits | 120 |

¹ General Chemistry should only be taken in the first year if the student has suitable math skills. Many graduate and professional schools require a second semester of physics.

² Directions should total 16-17 credits because SIDI is waived for BS Cell and Molecular Biology.