

B.S. IN BIOLOGY WITH A CONCENTRATION IN MOLECULAR CELL PHYSIOLOGY (BY.MC.BS)

| Code | Title | Credits |
|---|---|---------|
| Major Requirements/Biology - Molecular Cell Physiology (27 credits) ¹ | | |
| <i>(Satisfies Natural Sciences in General Education)</i> | | |
| BY-119 | Introductory Biology Major Seminar | 1 |
| BY-109 | Introduction to Ecology and Evolution | 4 |
| BY-110 | Introduction to Cell and Molecular Biology | 4 |
| BY-216 | Introduction to Genetics | 4 |
| <i>(Satisfies Technological Literacy (TL) in General Education)</i> | | |
| BY-310 | Biochemistry and Lab | 4 |
| BY-370 | Cell Biology | 3 |
| BY-375L | Laboratory in Molecular and Cellular Biology | 3 |
| <i>(Satisfies Reasoned Oral Discourse (RD) in General Education)</i> | | |
| BY-410 | Molecular Biology | 3 |
| BY-495 | Senior Seminar | 1 |
| <i>(Satisfies Reasoned Oral Discourse (RD) in General Education)</i> | | |
| At least 7 credits of BY must be at the 400 level | | |
| Molecular Cell Electives (19 credits) | | |
| Select a minimum of 19 Credits of Molecular Cell Electives | | 19 |
| <i>Choose one course to satisfy the "systems" area of Biology:</i> | | |
| BY-209 | Environment and Human Health | |
| BY-211 | Physiology with Anatomy I | |
| BY-212 | Physiology with Anatomy II | |
| BY-223 | General Microbiology | |
| BY-406 | Introduction to Neurosciences | |
| BY-425 | Principles of Developmental Biology | |
| BY-431 | Immunology | |
| <i>Choose one course to satisfy the "evolution" area of Biology:</i> | | |
| BY-223 | General Microbiology | |
| BY-424 | Evolution | |
| BY-425 | Principles of Developmental Biology | |
| BY-427 | Cancer Biology | |
| <i>Additional credits may be satisfied with:</i> | | |
| Additional "systems" or "evolution" courses | | |
| BY-360 | The Business of Biotechnology: From the Bench to the Market | |
| BY 299/BY 399/BY 499 Independent Study | | |
| BY-201 | Introduction to Biotechnology | |
| BY-250 | Research in Molecular Cell Physiology | |
| BY-450 | Research in Molecular Cell Physiology | |
| BY-301 | Vertebrate Histology | |
| BY-324 | Applied Microbiology | |

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|--|---|------------|
| BY-406L | Neurosciences Laboratory | |
| BY-412 | Vertebrate Physiology and Laboratory | |
| BY-475 | Endocrinology | |
| Interdisciplinary Requirements (30 credits) | | |
| Select one of the following: | | 3 |
| <i>(MA-115 or MA-116 or MA-125 satisfies Mathematics in General Education)</i> | | |
| MA-115 | Pre-Calculus Modeling for the Biological Sciences | |
| MA-116 | Calculus for the Biological Sciences | |
| MA-125 | Calculus with Analytic Geometry I | |
| MA-151 | Statistics with Applications | 3 |
| CE-111 | General Chemistry I | 3 |
| CE-111L | General Chemistry I Laboratory | 1 |
| CE-112 | General Chemistry II | 3 |
| CE-112L | General Chemistry II Laboratory | 1 |
| CE-241 | Organic Chemistry I | 3 |
| CE-241L | Organic Chemistry I Laboratory | 1 |
| CE-242 | Organic Chemistry II | 3 |
| CE-242L | Organic Chemistry II Laboratory | 1 |
| PH-105 | Physics for the Life Sciences I | 3 |
| PH-105L | Physics for the Life Sciences I Laboratory | 1 |
| PH-106 | Physics for the Life Sciences II | 3 |
| PH-106L | Physics for the Life Sciences II Laboratory | 1 |
| Free Electives (14 credits) ² | | |
| Complete a minimum of 14 credits of free electives ² | | 14 |
| General Education Requirements (30 credits) ³ | | |
| Complete 30 credits as outlined on the General Education table. ³ | | 30 |
| Total Credits | | 120 |

¹ BY-102 Applications in Biotechnology (3 cr.), BY-104 Human Biology (3 cr.), BY-105 Introductory Biology and Human Development (3 cr.), and BY-106 The Brain - Highs and Lows (3 cr.) are not available to BY majors.

² Please consult with your advisor regarding the required number of free electives that must be completed.

³ The General Education curriculum requires the completion of 45 credits. However, students may be able to share credits from within their major or interdisciplinary requirements. Please consult with your advisor to determine which General Education (<http://catalog.monmouth.edu/undergraduate-catalog/academic-programs-support-services-regulations/general-education-requirements/>) courses must be completed.

Notes

- 54 credits must be completed at the 200 level or higher.

Sequence Chart

| First Year | | | |
|--|---------|---|---------|
| Fall | Credits | Spring | Credits |
| EN-101 College Composition I | | 3 EN-102 College Composition II | 3 |
| BY-110 Introduction to Cell and Molecular Biology or 109 | 4 | BY-109 Introduction to Ecology and Evolution or 110 | 4 |
| BY-119 Introductory Biology Major Seminar | 1 | CE-112 & 112L | 4 |
| CE-111 General Chemistry I | 3 | FO-xxx Gen*Ed World Language | 3 |

| | | | |
|---|----------------|---|----------------|
| CE-111L General Chemistry I Laboratory | 1 | Gen*Ed Social Historical Perspectives (HS.SV) | 3 |
| MA-115 Pre-Calculus Modeling for the Biological Sciences or 116 | 3 | | |
| Semester Credits | 15 | Semester Credits | 17 |
| Second Year | | | |
| Fall | Credits | Spring | Credits |
| BY-216 Introduction to Genetics (Gen*Ed Technological Literacy (TL)) | 4 | CE-242 Organic Chemistry II | 3 |
| BY-xxx Biology Elective (Molecular Cell, Systems) | 4 | CE-242L Organic Chemistry II Laboratory | 1 |
| CE-241 & 241L | 4 | MA-151 Statistics with Applications | 3 |
| Gen*Ed Aesthetics (AT) AR,DA,MU,TH | 3 | BY-xxx Biology Elective (Evolution) | 3 |
| | | BY-xxx Biology Elective | 3 |
| | | Gen*Ed Literature (LIT) | 3 |
| Semester Credits | 15 | Semester Credits | 16 |
| Third Year | | | |
| Fall | Credits | Spring | Credits |
| BY-310 Biochemistry and Lab | 4 | PH-106 & 106L | 4 |
| PH-105 & 105L | 4 | BY-370 Cell Biology | 3 |
| Gen*Ed Cultural Diversity (CD) or Global Understanding (GU) | 3 | BY-375L Laboratory in Molecular and Cellular Biology (Gen*Ed Reasoned Oral Discourse (RD) and Writing Intensive (WT)) | 3 |
| Free Elective | 3 | Free Elective | 3 |
| Semester Credits | 14 | Semester Credits | 13 |
| Fourth Year | | | |
| Fall | Credits | Spring | Credits |
| BY-xxx Biology Electives | 6 | BY-410 Molecular Biology | 3 |
| PR-4xx Gen*Ed Interdisciplinary Perspectives (ISP) | 3 | BY-495 Senior Seminar | 1 |
| Gen*Ed Historical Perspectives (HS.SV) or Social Science Survey (SS.SV) | 3 | BY-xxx Biology Elective | 3 |
| Free Elective | 3 | Gen*Ed Social Science Survey (SS.SV) | 3 |
| | | Free Electives | 5 |
| Semester Credits | 15 | Semester Credits | 15 |
| Total Credits 120 | | | |