

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

Code	Title	Credits
<b>Major Requirements/Biology - Molecular Cell Physiology (27 credits)</b> <sup>1</sup>		
<i>(Satisfies Natural Sciences in General Education)</i>		
BY-119	Introductory Biology Major Seminar	1
BY-109	Introduction to Biodiversity 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		
<b>Molecular Cell Electives (19 credits)</b>		
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	

BY-406L	Neurosciences Laboratory	
BY-412	Vertebrate Physiology and Laboratory	
BY-475	Endocrinology	
<b>Interdisciplinary Requirements (30 credits)</b>		
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 Laboratory I	1
CE-112	General Chemistry II	3
CE-112L	General Chemistry Laboratory II	1
CE-241	Organic Chemistry I	3
CE-241L	Organic Chemistry Laboratory I	1
CE-242	Organic Chemistry II	3
CE-242L	Organic Chemistry Laboratory II	1
PH-105	Physics for the Life Sciences I	3
PH-105L	Physics for the Life Sciences Laboratory I	1
PH-106	Physics for the Life Sciences II	3
PH-106L	Physics for the Life Sciences Laboratory II	1
<b>Free Electives (14 credits)</b> <sup>2</sup>		
Complete a minimum of 14 credits of free electives <sup>2</sup>		14
<b>General Education Requirements (30 credits)</b> <sup>3</sup>		
Complete 30 credits as outlined on the General Education table. <sup>3</sup>		30
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> 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.

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

<sup>3</sup> 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 Biodiversity 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 Laboratory I	1	Gen*Ed Social Historical Perspectives (HS.SV)	3
MA-115 Pre-Calculus Modeling for the Biological Sciences or 116	3		
<b>Semester Credits</b>	<b>15</b>	<b>Semester Credits</b>	<b>17</b>
<b>Second Year</b>			
<b>Fall</b>	<b>Credits</b>	<b>Spring</b>	<b>Credits</b>
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 Laboratory II	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
<b>Semester Credits</b>	<b>15</b>	<b>Semester Credits</b>	<b>16</b>
<b>Third Year</b>			
<b>Fall</b>	<b>Credits</b>	<b>Spring</b>	<b>Credits</b>
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
<b>Semester Credits</b>	<b>14</b>	<b>Semester Credits</b>	<b>13</b>
<b>Fourth Year</b>			
<b>Fall</b>	<b>Credits</b>	<b>Spring</b>	<b>Credits</b>
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
<b>Semester Credits</b>	<b>15</b>	<b>Semester Credits</b>	<b>15</b>
<b>Total Credits 120</b>			