

# B.S. IN SOFTWARE ENGINEERING (SE.BS)

Code	Title	Credits
<b>Major Requirements/Software Engineering (36 credits)</b>		
SE-205	Requirements Engineering and Specifications	3
SE-207	Software Design and Architecture	3
SE-306	Formal Methods in Software Engineering	3
SE-312	Software Verification, Validation, and Maintenance	3
SE-357	Engineering Web-based Systems	3
SE-358	Software Frameworks	3
SE-402	Human Computer Interaction	3
SE-403	Software Process Improvement	3
SE-450	Cyber Security	3
<i>Practicum</i>		
SE-485A	Software Practicum	3
SE-485B	Software Practicum	3
<i>(Satisfies Reasoned Oral Discourse (RD) in General Education)</i>		
Select 3 credits of Software Engineering Electives from the Following Courses:		3
SE-337	Enterprise Mobile Apps Design and Development	
SE-352	Embedded Systems and Robotic Control	
SE-353	Comparative Languages	
SE-360	Introduction to Game Development	
SE-370	Program Development Under Unix	
SE-418	Software Project Management	
<b>Interdisciplinary Requirements (57 credits)</b>		
Select 3 credits from the following:		3
BE-201	Microeconomics	
GIS-224	Introduction to Geographic Information Systems (GIS)	
<i>(Satisfies Social Science Survey (SS.SV) in General Education)</i>		
CS-104	Introduction to Problem Solving and Software Development	3
<i>(Satisfies Technological Literacy (TL) in General Education)</i>		
CS-175	Introduction to Computer Science I	3
CS-175L	Introduction to Computer Science I lab	1
CS-176	Introduction to Computer Science II	3
CS-176L	Introduction to Computer Science II Lab	1
CS-205	Data Structures and Algorithms	3
CS-205L	Data Structures and Algorithms Lab	1
CS-286	Computer Architecture I	3
CS-438	Operating Systems Analysis	3
MA-130	Applied Discrete Mathematics	3
<i>(Satisfies Mathematics in General Education)</i>		
MA-125	Calculus with Analytic Geometry I	4

MA-126	Calculus with Analytic Geometry II	4
MA-220	Probability and Statistics I	3
Select 3 credits from the following:		3
PR-407	Morality and Community	
PR-432	Ethics and Professionalism in Science and Engineering	
PR-449	The Helping Professions in Film and Media	
PR-457	Issues in Cognitive Science	
PR-460	How Technology Affects Values	
<i>(Any Perspectives (PR) course listed above satisfies the Interdisciplinary Perspectives (ISP) in General Education)</i>		
PH-211	General Physics with Calculus I	4
PH-211L	General Physics with Calculus Laboratory I	1
PH-212	General Physics with Calculus II	4
PH-212L	General Physics with Calculus Laboratory II	1
<i>(Physics courses satisfy Natural Science (NS) in General Education)</i>		
Select 6 credits from the following Math/Science courses:		6
MA-311	Differential Equations	
MA-221	Linear Algebra	
MA-225	Calculus with Analytic Geometry III	
MA-318	Combinatorics and Graph Theory	
MA-320	Probability and Statistics II	
CE-111 & 111L	General Chemistry I and General Chemistry Laboratory I (Lab courses are 1 credit each)	
CE-112 & 112L	General Chemistry II and General Chemistry Laboratory II (Lab courses are 1 credit each)	
BY-109	Introduction to Biodiversity and Evolution	
BY-110	Introduction to Cell and Molecular Biology	
PH-301	Modern Physics	
PH-302	Theoretical Physics	
<b>Free electives (3 credits) <sup>1</sup></b>		
Select 3 credits of free electives <sup>1</sup>		3
<b>General Education Requirements (24 credits) <sup>2</sup></b>		
Complete 24 credits as outlined on the General Education table. <sup>2</sup>		24
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Please consult with your advisor regarding the required number of free electives that must be completed.

<sup>2</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.

## Note

- 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
CS-104 Introduction to Problem Solving and Software Development (Gen*Ed Technological Literacy (TL))		3 CS-175 & 175L	4
Gen*Ed Aesthetics (AT) AR,DA,MU,TH		3 MA-130 Applied Discrete Mathematics (Gen*Ed Mathematics)	3
Gen*Ed Historical Perspectives (HS.SV)		3 Gen*Ed Historical Perspectives (HS.SV) or Social Science Survey (SS.SV)	3
		FO-xxx Gen*Ed World Language	3
Semester Credits	12	Semester Credits	16

### Second Year

Fall	Credits	Spring	Credits
MA-125 Calculus with Analytic Geometry I		4 CS-205 & 205L	4
CS-176 & 176L		4 MA-126 Calculus with Analytic Geometry II	4
SE-205 Requirements Engineering and Specifications		3 CS-286 Computer Architecture I	3
BE-201 Microeconomics or GIS 224 (Gen*Ed Social Science Survey (SS.SV))		3 SE-207 Software Design and Architecture	3
EN-2xx Gen*Ed Literature (LIT)		3 Gen*Ed Cultural Diversity (CD) or Global Understanding (GU)	3
Semester Credits	17	Semester Credits	17

### Third Year

Fall	Credits	Spring	Credits
SE-312 Software Verification, Validation, and Maintenance		3 SE-358 Software Frameworks	3
SE-357 Engineering Web-based Systems		3 SE-403 Software Process Improvement	3
MA-220 Probability and Statistics I		3 PH-212 & 212L	5
PH-211 & 211L		5 SE-xxx Software Engineering Elective	3
Semester Credits	14	Semester Credits	14

### Fourth Year

Fall	Credits	Spring	Credits
SE-306 Formal Methods in Software Engineering		3 SE-402 Human Computer Interaction	3
SE-450 Cyber Security		3 SE-485B Software Practicum	3
Math/Science Elective (See curriculum chart)		3 CS-438 Operating Systems Analysis	3
Free Elective		3 Math/Science Elective (see curriculum chart)	3
SE-485A Software Practicum		3 PR-4xx Gen*Ed Interdisciplinary Perspectives (ISP)	3
Semester Credits	15	Semester Credits	15

Total Credits 120