

MATHEMATICS

The Major for the B.A. in Mathematics

Code	Title	Credit Hours
MATH 160	Calculus I	3
MATH 161	Calculus II	3
MATH 214	Calculus III	3
MATH 240	Discrete Mathematics	3
MATH 244	Linear Algebra	3
MATH 350	Advanced Calculus	3
MATH 422	Foundations and Philosophy of Mathematics	3
Select two of the following:		6
MATH 404W	Real Analysis	
MATH 414W	Abstract Algebra	
MATH 415	Topology	
MATH	Four MATH electives beyond 240-level	12
CSCI 200	Introduction to Computer Programming	3
PHYS 151	Introduction to University Physics (Calculus-Based)	4
PHYS 152	Introduction to University Physics (Calculus-Based)	4
Total Credit Hours		50

Recommended: A minor in another subject, such as astronomy, business, chemistry or philosophy.

The Major for the B.S. in Computer Science

Code	Title	Credit Hours
CSCI 175	Introduction to Computer Science	3
CSCI 200	Introduction to Computer Programming	3
CSCI 201	Data Structures	3
CSCI 250	Databases	3
CSCI 310	Networking	3
CSCI 325	Programming Languages	3
CSCI 320	Operating Systems	3
CSCI 360	Computer Architecture	3
CSCI 405	Artificial Intelligence	3
CSCI 410	Analysis of Algorithms	3
DTSC 220	Introduction to Data Science	3
DTSC 420	Ethical and Philosophical Issues in Computing	3
MATH 160	Calculus I	3
MATH 221	Statistics for Data Analysis	3
MATH 240	Discrete Mathematics	3
Total Credit Hours		45

The Major for the B.S. in Data Science

Code	Title	Credit Hours
MATH 160	Calculus I	3
MATH 221	Statistics for Data Analysis	3
CSCI 175	Introduction to Computer Science	3
CSCI 200	Introduction to Computer Programming	3
CSCI 201	Data Structures	3
CSCI 405	Artificial Intelligence	3
DTSC 220	Introduction to Data Science	3
DTSC 250	Statistics Using R	3
DTSC 320	Data Management	3
DTSC 400	Applied Data Science	3
DTSC 420	Ethical and Philosophical Issues in Computing	3
Three additional electives in DTSC, CSCI or MATH		9
Total Credit Hours		42

The Minor in Mathematics

Eighteen hours to include

Code	Title	Credit Hours
MATH 160	Calculus I	3
MATH 161	Calculus II	3
MATH 214	Calculus III	3
Select nine credits from the following:		9
MATH 240	Discrete Mathematics	
MATH 244	Linear Algebra	
MATH 300	Differential Equations	
MATH 310	Number Theory	
MATH 315	Probability	
MATH 320	History of Mathematics	
MATH 340	Geometry	
MATH 350	Advanced Calculus	
MATH 380	Chaotic Dynamical Systems	
MATH 415	Topology	
Total Credit Hours		18

The Minor in Computer Science

Code	Title	Credit Hours
CSCI 200	Introduction to Computer Programming	3
CSCI 201	Data Structures	3
CSCI 320	Operating Systems	3
Select three of the following:		9
CSCI 175	Introduction to Computer Science	
CSCI 250	Databases	
CSCI 310	Networking	
CSCI 325	Programming Languages	
CSCI 360	Computer Architecture	
CSCI 405	Artificial Intelligence	
CSCI 410	Analysis of Algorithms	

DTSC 420	Ethical and Philosophical Issues in Computing	
MATH 240	Discrete Mathematics	
Total Credit Hours		18

The Minor in Data Science

Code	Title	Credit Hours
MATH 160	Calculus I	3
CSCI 200	Introduction to Computer Programming	3
DTSC 220	Introduction to Data Science	3
DTSC 250	Statistics Using R	3
DTSC 320	Data Management	3
DTSC 400	Applied Data Science	3
Total Credit Hours		18

Pre-Engineering Concentration

The B.A./M.S. agreement between Eastern University and Villanova University leads students to the B.A. from Eastern University in Mathematics and the M.S. from Villanova University in one of seven tracks.

Program Requirements

Students at Eastern University must be enrolled in Eastern University's full-time B.A. in Mathematics program to be considered for the program.

Students must complete the required slate of courses at Eastern University (see below). Students must score no lower than B- in any of these courses and must maintain a minimum cumulative GPA of 3.5 in these courses (not in overall GPA). If the student's cumulative GPA in the required EU courses falls below a 3.5, they will be placed on program probation for one semester. If the probation semester does not raise the cumulative GPA to the 3.5 threshold, the student will be disqualified from the program. At least 10 of the courses listed below must be completed before the student can enroll in undergraduate engineering courses at Villanova.

Code	Title	Credit Hours
Required Eastern University Courses		
CSCI 200	Introduction to Computer Programming	3
MATH 160	Calculus I	3
MATH 161	Calculus II	3
MATH 214	Calculus III	3
MATH 240	Discrete Mathematics	3
MATH 244	Linear Algebra	3
MATH 300	Differential Equations	3
MATH 350	Advanced Calculus	3
MATH 422	Foundations and Philosophy of Mathematics	3
Three additional MATH courses at the 300 level or above		9
Two additional MATH courses at the 400 level or above		6
CHEM 121	General Chemistry I	3
CHEM 122	General Chemistry II	3
CHEM 123	General Chemistry Laboratory I	1
CHEM 124W	General Chemistry Laboratory II	1
PHYS 151	Introduction to University Physics (Calculus-Based)	4

PHYS 152	Introduction to University Physics (Calculus-Based)	4
Total Credit Hours		58

In addition to the Eastern University courses, students must complete undergraduate Engineering courses at Villanova as prerequisites for the M.S. Engineering tracks. The number of required undergraduate credits for each track are given below. Specific course lists are available from the Pre-Engineering Advisor in Eastern's Mathematics Department.

Engineering Tracks

Required prerequisite undergraduate credits from Villanova University

Code	Title	Credit Hours
Tracks		
	Biochemical Engineering	18
	Chemical Engineering	18
	Cybersecurity	11
	Electrical Engineering	20
	Mechanical Engineering (Thermal Fluids Track)	9
	Mechanical Engineering (Mechanics of Materials Track)	12
	Mechanical Engineering (Dynamics/Controls Track)	15
	Sustainable Engineering (Water Shed or Environmental Tracks)	15
	Water Resources and Environmental Engineering	11
	MS in Chemical Engineering (Undergraduate required)	18
	MS in Biochemical Engineering (Undergraduate required)	18