

Bachelor of Science – Mathematics Requirements (MATH BS)

65-73 credits (min. 32 upper level credits)

Mathematics Core Requirements (29 credits)	Pre-requisites	Credits	Semesters Offered*	Semester Taken and Grade
MATH 151 – Calculus and Analytic Geometry I	MATH 150 or Milestone 5 on Math Placement	4	FSZ	
MATH 152 – Calculus and Analytic Geometry II	MATH 151 or MATH155B	4	FSZ	
MATH 221 - Introduction to Linear Algebra	MATH 151 or MATH 155B	3	FSZ	
MATH 225 - Introduction to Differential Equations	MATH 152 (MATH 251 is Recommended Preparation)	3	FWSZ	
MATH 251 - Multivariable Calculus	MATH 152	4	FSZ	
MATH 300 - Introduction to Mathematical Reasoning	MATH 221	4	FSZ	
MATH 301 - Introduction to Mathematical Analysis I	MATH 300 and MATH 152	4	FSZ	
MATH 302 - Introduction to Mathematical Analysis II	MATH 251 and MATH 301	3	FS	
Mathematics/Statistics Electives: Six MATH/STAT courses of at least 3 credits each, with at least three courses at the 400 level or above (See page 2 for guidance)				
	See catalog	3-4		
	See catalog	3-4		
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Physics and Computer Science Requirements (12 credits)				
CMSC 201 - Computer Science I	MATH 150/151/155 or Milestone 5 on Math Placement	4	FS	
PHYS 121 - Introductory Physics I	MATH 151 (pre-/co-req)	4	FSZ	
PHYS 122 - Introductory Physics II	PHYS 121/121H, MATH 152 (pre-/co-req)	4	FSZ	
Supplementary Requirements (6-8 credits) – See page 2 for guidance				
	See catalog	3-4		
	See catalog	3-4		

Minimum grade of "C" is required in all courses applied to the major and all courses used as prerequisites for major requirements.

*The "Semesters Offered" column indicates the semester in which that course is typically offered, subject to change by the department that administers the course. Please consult the UMBC Schedule of Classes for current offerings. Key: F = Fall, S = Spring, Z = Summer, W = Winter.

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Mathematics/Statistics Electives

Complete a minimum of **six MATH/STAT courses of at least 3 credits each, with at least three courses at the 400 level or above.** MATH 432, STAT 350, and STAT 351 are excluded.

For **one** of the six MATH/STAT electives, allow two or more approved courses carrying fewer than 3 credits each to be bundled, provided the bundle totals at least 3 credits. Please see the approved list below.

Approved Courses for Bundling:

MATH 426 - Introduction to Math Software Packages: MATLAB (2)	MATH 499 - Independent Study in Mathematics (1-4)
MATH 427 - Mathematical Software Packages: Maple (1)	STAT 432 - Statistical Computer Packages and Their Applications: SAS and R (1)
MATH 479 - Mathematical Problem-Solving Seminar (1)	STAT 470 - Probability for Actuarial Science (1)
MATH 480 - Senior Seminar (1)	STAT 490 - Special Topics in Statistics (1-4)
MATH 490 - Special Topics in Mathematics (1-4)	STAT 496 - Statistics Practicum (1-4)
MATH 496 - Mathematics Practicum (1-4)	STAT 499 - Independent Study in Statistics (1-4)

Information regarding specialties in specific fields of mathematics is available on the department website.

Supplementary Electives

Mathematics and statistics have proven indispensable in many disciplines in the physical sciences, the social sciences and even in the humanities and arts. Much of mathematics and statistics has developed with a view toward its applications in other fields. To develop an appreciation of the connection, mathematics majors are required to additional courses from other departments reflecting these interconnections. The list below is taken from the 2025-2026 Undergraduate Catalog – please see the current catalog for an up-to-date list of approved courses.

BIOL 463 - Theoretical and Quantitative Biology (4)	ENCH 300 - Chemical Process Thermodynamics (3)
CHEM 401 - Chemical and Statistical Thermodynamics (3)	ENME 217 - Engineering Thermodynamics (3)
CHEM 415 - Statistical Mechanics and Theory of Rate Processes (3)	ENME 410 - Operations Research I (3)
CMPE 320 - Probability, Statistics, and Random Processes (3)	MATH 432 - History of Mathematics (3)
CMPE 323 - Signal and Systems Theory (4)	PHIL 248 - Introduction to Scientific Reasoning (3)
CMSC 341 - Data Structures (3)	PHIL 346 - Deductive Logic (3)
CMSC 441 - Design and Analysis of Algorithms (3)	PHIL 372 - Philosophy of Science (3)
CMSC 442 - Information and Coding Theory (3)	PHYS 224 - Vibrations and Waves / PHYS 211 - Introductory Physics III: Waves and Relativity (3)
CMSC 443 - Cryptology (3)	PHYS 303 - Thermal and Statistical Physics / PHYS 311 - Statistical Mechanics (3)
CMSC 451 - Automata Theory and Formal Languages (3)	PHYS 321 - Intermediate Mechanics / PHYS 411 - Classical Mechanics (3)
CMSC 452 - Logic for Computer Science (3)	PHYS 407 - Electromagnetic Theory / PHYS 412 - Electromagnetism (3)
CMSC 453 - Applied Combinatorics and Graph Theory (3)	PHYS 424 - Introduction to Quantum Mechanics / PHYS 312 - Quantum Mechanics I (3)
ECON 311 - Intermediate Microeconomic Analysis (3)	PHYS 440 - Computational Physics (3)
ECON 374 - Financial Management (3)	
ECON 417 - The Economics of Strategic Interaction (3)	
ECON 421 - Introduction to Econometrics (3)	
EDUC 426 - Methods of Teaching Mathematics in the Secondary School (3)	

Courses on this list may have prerequisite requirements that are not included in the MATH BS major. Please consult the UMBC Undergraduate Catalog for more information on the required preparation for your preferred courses. Not all courses in this list are offered on a regular basis. Always consult the UMBC schedule of classes for course offerings and plan accordingly.

Mathematics majors with a major or minor in Statistics must have **two upper-level elective courses of three (or more) credits** for each program, neither of which is being counted simultaneously for both programs.