

B.S. Mathematics (MAT)
(Option 3: Operations Research)
College: Arts & Sciences

DEGREE REQUIREMENTS

Course requirements for all UNCW degrees include: (1) Basic Studies, (2) specific major requirements, and (3) sufficient elective hours for a combined total of a minimum of 124 hours.

(1) ¹BASIC STUDIES (45 semester hours)

See Basic Studies sheet and/or information on the WEB at <http://www.uncw.edu/uc/basicstudies.htm>

(2) MAJOR REQUIREMENTS - MAT (Minimum 55 hours)

Check when complete:

Core: (34 hours)

_____ + ^{2,3} MAT 161	Calculus w/ Analytical Geometry (4) Prerequisite: MAT 112 or 115 or equivalent preparation
_____ + ³ MAT 162	Calculus w/ Analytical Geometry (4) Prerequisite: MAT 161
_____ ³ MAT 261	Multivariate Calculus (4) Prerequisite: MAT 162
_____ MAT 275	Axiomatic Systems (3) Prerequisite: MAT 152 or 161
_____ MAT 311	Intermediate Analysis (3) Prerequisite: MAT 261 and 275
_____ ³ MAT 335	Linear Algebra and Matrices (3) Prerequisite: MAT 162
_____ MAT 336	Introductory Modern Algebra I (3) Prerequisite: MAT 275, 335, or consent of instructor
_____ MAT 495	Senior Seminar (3) Prerequisite: Junior or senior standing and consent of instructor (Meets Oral Communication Competency Requirement)
_____ + ³ STT 215	Introduction to Statistics (3) Prerequisite: MAT 111 or 115
_____ STT 315	Probability and Statistics (3) Prerequisite: STT 215 and MAT 152 or 162
_____ + ³ CSC 112 or 121	Introduction to Computer Programming (3) or Introduction to Computer Science I (3) Prerequisite: MAT 111/115

Option 3: Operations Research (21 hours)

_____ MAT 435	Linear Programming (3) Prerequisite: CSC 112 or 121 and MAT 335
_____ MAT 436	Discrete Optimization (3) Prerequisite: MAT 435
_____ MAT 465	(STT 465) Applied Probability (3) Prerequisite: MAT 261 and STT 315
_____ STT 305, 411, or 412	Statistics in Practice (3) or Design of Experiments and Analysis of Variance (3) or Applied Regression and Correlation (3)
_____ MAT/STT 300-400	
_____ MAT/STT 300-400	Choose 9 hours of MAT or STT at the 300-400 level
_____ MAT/STT 300-400	

NOTE: It is strongly recommended that a student either complete a minor in a discipline that applies mathematics or elect advanced coursework involving mathematical applications in another discipline. A list of recommended courses in biology, chemistry, computer science, earth sciences, economics, information systems and operations management, physics, psychology, sociology, and statistics is available in the department office. A student who plans to pursue graduate study is urged to take MAT 411-412.

¹*PHY 201 is highly recommended as the Basic Studies physical science requirement

²Students interested in the degree program in MAT are encouraged to begin w/ MAT 161. Initial placement is based on high school background and the MAT Placement Test. Students not prepared for MAT 161 should begin w/ MAT 115 or 111-112, as appropriate.

³**Computer Competency Requirement:** MAT 161-162, 261, and 335; STT 215 and CSC 112 or 121

An overall average of "C" (2.00) or better is required for all 300-400 level MAT or STT courses counted toward the major.

**These courses require a lab*

+May also be used to satisfy Basic Studies requirements

(3) ELECTIVES

_____ Elective hours to equal a minimum of 124 hours (**Recommended areas related to MAT: computer science, economics, information systems and operations management**)

Requirements to declare MAT: Completion of 24 hours

For further information see the MAT WEB site: <http://www.uncw.edu/mat> and <http://www.uncw.edu/COURSES/Mat.htm>

MATHEMATICS and STATISTICS COURSES

MAT 101-102.	College Mathematics for the General Student (3,3)
MAT 105.	Math Study Skills and Algebra Review (1) Prerequisite: Performance on the UNCW Math Placement Test
MAT 111.	College Algebra (3) Prerequisite: Satisfactory performance on the UNCW Math Placement Test
MAT 112.	Trigonometry (3) Prerequisite: MAT 111 or satisfactory performance on the UNCW Math Placement Test
MAT 115.	Precalculus (3) Prerequisite: Satisfactory performance in the UNCW Math Placement Test
MAT 141-142.	Basic Concepts of Mathematics (3-3)
MAT 151-152.	Basic Calculus with Applications (3-3) Prerequisite: MAT 111 or 115 for 151; MAT 112 or 115 for 152
MAT 161-162.	Calculus with Analytic Geometry (4-4) Prerequisite: MAT 112 or 115 or equivalent preparation
MAT 243.	Concepts and Applications of Discrete Mathematics (3) Prerequisite: MAT 142; MAT 151 or MAT 161
MAT 261.	Multivariate Calculus (4) Prerequisite: MAT 162
MAT 275.	Axiomatic Systems (3) Prerequisite: 152 or 161
MAT 311.	Intermediate Analysis (3) Prerequisite: MAT 261 and 275
MAT 321.	Number Theory and Its Applications (3) Prerequisite: MAT 275 or CSC 133
MAT 325.	(CSC 325) Numerical Algorithms (3) Prerequisite: CSC 112 or 121, and MAT 162
MAT 335.	Linear Algebra and Matrices (3) Prerequisite: MAT 162
MAT 336.	Introductory Modern Algebra I (3) Prerequisite: MAT 275, 335 or consent of instructor
MAT 337.	Introductory Modern Algebra II (3) Prerequisite: MAT 336
MAT 345.	Modern College Geometry (3) Prerequisite: MAT 275 or consent of instructor
MAT 346.	Historical Development of Mathematics (3) Corequisite: MAT 275 or consent of instructor
MAT 361.	Differential Equations (3) Prerequisite: MAT 261
MAT 365.	Vector Calculus (3) Prerequisite: MAT 261 and 335
MAT 367.	Principles in Applied Mathematics (3) Prerequisite: MAT 261; MAT 335 recommended
MAT 375.	Combinatorics (3) Prerequisite: MAT 275 or CSC 133
MAT 395.	Problem Solving in Mathematics (1) Prerequisite: MAT 261
MAT 411-412.	(511-512) Real Analysis (3-3) Prerequisite: MAT 261, 275, and 335
MAT 415.	(515) Introduction to Complex Variables (3) Prerequisite: MAT 311 and 367 or 411
MAT 418-419.	(518-519) Applied Analytical Methods (3-3) Prerequisite: MAT 361 and 367
MAT 421.	(521) Number Theory I (3) Prerequisite: MAT 336
MAT 425.	(525; CSC 425/525) Numerical Analysis (3) Prerequisite: MAT 325, 335, and 361
MAT 435.	(535) Linear Programming (3) Prerequisite: CSC 112 or 121 and MAT 335
MAT 436.	(536) Discrete Optimization (3) Prerequisite: MAT 435
MAT 451.	(551) Topology I (3) Prerequisite: MAT 275 and 336
MAT 457.	(557) Differential Geometry (3) Prerequisite: MAT 365 or 411
MAT 463.	(563) Ordinary Differential Equations (3) Prerequisite: MAT 335 and 361
MAT 465.	(565; STT 465/565) Applied Probability (3) Prerequisite: MAT 261 and STT 315
MAT 471.	Projects in Mathematical Modeling (3) Prerequisite: MAT 361 or 435 or MAT/STT 465
MAT 475.	Topics in Mathematics (3) Prerequisite: Junior or senior standing and permission of instructor
MAT 481.	(581) Introduction to Mathematical Logic (3) Prerequisite: MAT 275 and 336
MAT 491.	Directed Individual Study (1-3) Prerequisite: See undergraduate catalogue
MAT 495.	Seminar in Mathematics (3) Prerequisite: Junior or senior standing and consent of instructor
MAT 498.	Internship in Mathematics (1-3) Prerequisite: See undergraduate catalogue
MAT 499.	Honors Work in Mathematics (2-3) Prerequisite: Eligibility for honors program
<hr/>	
STT 210.	Introduction to Statistics with Applications in the Health Sciences (3) Prerequisite: MAT 111
STT 215.	Introduction to Statistics (3) Prerequisite: MAT 111 or 115
STT 305.	Statistical Programming (3) Prerequisite: STT 215 or equivalent
STT 315.	Probability and Statistics (3) Prerequisite: STT 215 and MAT 152 or 162
STT 350.	Survey Sampling (3) Prerequisite: An introductory statistics course from any department
STT 411.	(511) Design of Experiments and Analysis of Variance (3) Prerequisite: Any elementary statistics course
STT 412.	(512) Applied Regression and Correlation (3) Prerequisite: Any elementary statistics course
STT 420.	Biostatistical Analysis (3) Prerequisite: STT 305 or consent of instructor
STT 425.	Categorical Data Analysis (3) Prerequisite: STT 305 or consent of instructor
STT 430.	(530) Introduction to Non-Parametric Statistics (3) Prerequisite: STT 215 and 3 hrs of STT at the 300 level
STT 435.	Applied Multivariate Analysis (3) Prerequisite: STT 315, 411 and 412
STT 440.	(540) Linear Models and Regression Analysis (3) Prerequisite: MAT 261 and 335 and STT 315
STT 465.	(565; MAT 465/565) Applied Probability (3) Prerequisite: MAT 261 and STT 315
STT 466-467.	(566-567) Mathematical Statistics (3-3) Prerequisite: MAT 261 and STT 315
STT 475.	Topics in Statistics (3) Prerequisite: Senior standing or permission of instructor
STT 490.	Case Studies in Statistical Consulting (3) Prerequisite: At least 9 hours in STT courses numbered 300 or higher and consent of instructor
STT 491.	Directed Individual Study (1-3) Prerequisite: Overall GPA of at least 2.00, at least a 3.00 average on all MAT and STT courses taken, junior or senior standing, and consent of instructor, department chair, and dean
STT 498.	Internship in Statistics (3) Prerequisite: Overall gpa of at least 2.50, gpa in STT of 2.8, and at least 9 hrs of STT 300 or higher
STT 499.	Honors work in Statistics (2-3) Prerequisite: Eligibility for honors program