

**B.A. Mathematics (MAT)**

(Option 1: Mathematics)

*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) <sup>1</sup>BASIC 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 45 hours)

Check when complete:

**CORE:** (33 hours)

_____ + <sup>2,3</sup> MAT 161	Calculus w/ Analytical Geometry (4) Prerequisite: MAT 112 or 115 or equivalent preparation
_____ + <sup>3</sup> MAT 162	Calculus w/ Analytical Geometry (4) Prerequisite: MAT 161
_____ <sup>3</sup> 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
_____ <sup>3</sup> 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
_____ + <sup>3</sup> 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
_____ + <sup>3</sup> CSC 112 <u>or</u> 121	Introduction to Computer Programming (3) or Introduction to Computer Science I (3) Prerequisite: MAT 111/115

**Option 1: Mathematics** (12 hours)

_____ MAT <sup>4</sup> 300-400	6 hours of MAT at the 300-400 level; graduate school candidates are strongly encouraged to take MAT 411-412
_____ MAT 300-400	
_____ MAT or STT 300-400	
_____ MAT or STT 300-400	6 hours of MAT or STT at the 300-400 level

**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.

<sup>1</sup>+\*PHY 201 is highly recommended as the Basic Studies physical science requirement

<sup>2</sup>Students 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.

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

<sup>4</sup>**Oral Communication Competency Requirement:** MAT 346 or any other approved oral intensive course (see undergraduate catalogue)

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

**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

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