B.S. Mathematics (MAT)

(Option 2: Applied 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) BASIC STUDIES (45 semester hours)

See Basic Studies sheet and/or information on the WEB at http://www.uncw.edu/uc/basic/basic.html

(2) MAJOR REQUIREMENTS - MAT (Minimum 63 hours)

Check when complete:

Core: (34 hours)

_____ +[1,2]MAT 161 Calculus w/ Analytical Geometry (4) Prerequisite: MAT 112 or 115 or equivalent preparation
_____ +[2]MAT 162 Calculus w/ Analytical Geometry (4) Prerequisite: MAT 161
_____ [2]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
_____ [2]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 (1-3) Prerequisite: Junior or senior standing and consent of instructor (Meets **Oral Communication Competency Requirement**)
_____ +[2]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
_____ +[2]CSC 112 or 121 Introduction to Computer Programming (3) or Introduction to Computer Science I (3) Prerequisite: MAT 111/115

Option 2: Applied Mathematics (29 hours)

_____ 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 418 Applied Analytical Methods (3) Prerequisite: MAT 361 and 3676
_____ MAT/STT 300-400 Choose 9 hours of MAT or STT at the 300-400 level. Recommended courses are:
_____ MAT/STT 300-400 MAT 325, 415, 419, 425, 457, 463, 465, or 475
_____ MAT/STT 300-400
_____*+PHY 201 General Physics (4) Corequisite: MAT 161
_____*+PHY 202 General Physics (4) Prerequisite: PHY 201, corequisite: MAT 162

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]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.

[2] **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: biology, chemistry, computer science, earth sciences, economics, and physics)**

Requirements to declare MAT: Completion of 24 hours

For further information see the MAT WEB site: http://www.uncw.edu/math and http://www.uncw.edu/catalogue/undergraduate/catalogue/91010COU%20DESC.pdf#page=78

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

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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