

# B.S. IN MATHEMATICS - MATHEMATICS CONCENTRATION

*College of the Sciences and Mathematics*

## Curriculum

| Code   | Title   | Credits    |
|--|---|------------|
| General Education Requirements ( <a href="http://catalog.wcupa.edu/undergraduate/general-education-requirements/">http://catalog.wcupa.edu/undergraduate/general-education-requirements/</a> ) |   |            |
|  | First Year Experience   | 4          |
| <b>Academic Foundations</b>  |   |            |
|  | English Composition requirement   | 6          |
|  | Mathematics requirement   | 3          |
|  | Interdisciplinary requirement   | 3          |
|  | Diverse Communities requirement   | 3          |
| <b>Distributive Requirements</b>   |   |            |
|  | Science requirement   | 6          |
|  | Behavioral & Social Science requirement   | 6          |
|  | Humanities requirement  | 6          |
|  | Arts requirement  | 3          |
| <b>Additional Baccalaureate Requirements</b>   |   |            |
|  | Writing Emphasis requirement  | 9          |
|  | Speaking Emphasis requirement   | 9          |
|  | Ethics requirement  | 3          |
| <b>Major Requirements</b>  |   |            |
| MAT 161  | Calculus I  | 4          |
| MAT 162  | Calculus II   | 4          |
| MAT 200  | The Nature of Mathematics   | 3          |
| MAT 261  | Calculus III  | 4          |
| MAT 311  | Linear Algebra <sup>1</sup>   | 3          |
| MAT 343  | Differential Equations  | 3          |
| MAT 411  | Algebra I   | 3          |
| MAT 421  | Mathematical Statistics I   | 3          |
| MAT 441  | Real Analysis I   | 3          |
| MAT 445  | Complex Variables   | 3          |
| <b>Mathematics Electives</b>   |   |            |
|  | Select 18 semester hours from upper-division (300-level or higher) mathematics courses; at least one course from each of the areas below. | 18         |
|  | Algebra elective  |            |
|  | Analysis elective   |            |
|  | Applied mathematics elective  |            |
| <b>Related/Cognate Requirements</b>  |   |            |
| CSC 141  | Computer Science I <sup>1</sup>   | 3          |
| ENG 371  | Technical Writing <sup>1</sup>  | 3          |
| PHY 170  | Physics I <sup>1</sup>  | 4          |
| PHY 180  | Physics II  | 4          |
| SPK 230  | Business and Professional Speech Communication <sup>1</sup>   | 3          |
| <b>Capstone Requirement</b>  |   |            |
| MAT 405  | Special Topics in Mathematics <sup>3</sup>  | 3          |
| <b>Free Electives or Independent Study</b>   |   |            |
|  | Select 16 hours of independent study and free electives (chosen under advisement)   | 16         |
| <b>Total Minimum Credits Required</b>  |   | <b>120</b> |

## Accelerated B.S. in Mathematics - Mathematics Concentration to M.A. in Mathematics Program

Students may substitute up to 5 graduate courses for B.S. course requirements, subject to the following guidelines:

| Code   | Title                                      | Credits |
|--|--|---------|
| <b>Major Requirements</b>  |  |         |
| MAT 445<br>or MAT 575  | Complex Variables<br>Complex Analysis I    | 3       |
| <b>Algebra Elective</b>  |  |         |
| May be replaced by one of the following:   |  |         |
| MAT 513  | Linear Algebra                             |         |
| MAT 514  | Theory Of Numbers                          |         |
| MAT 515  | Algebra I                                  |         |
| MAT 516  | Algebra II                                 |         |
| <b>Analysis Elective</b>   |  |         |
| May be replaced by one of the following:   |  |         |
| MAT 535  | Topology                                   |         |
| MAT 543  | Topics in Differential Equations           |         |
| MAT 545  | Real Analysis I                            |         |
| MAT 546  | Real Analysis II                           |         |
| <b>Applied Mathematics Elective</b>  |  |         |
| May be replaced by one of the following:   |  |         |
| STA 505  | Mathematical Statistics I <sup>2</sup>     |         |
| MAT 548  | Industrial Mathematics - Continuous Models |         |
| MAT 549  | Industrial Mathematics - Discrete Models   |         |
| MAT 552  | Operations Research                        |         |
| MAT 553  | Stochastic Modeling                        |         |
| MAT 554  | Scientific Computing                       |         |
| MAT 555  | Industrial Practicum - Continuous Models   |         |
| <b>Mathematics Electives</b>   |  |         |
| May be replaced by any course from the three areas above or any of the following:                            |  |         |
| MAT 521  | Discrete Mathematics & Graph Theory        |         |
| MAT 532  | Geometry I                                 |         |
| MAT 533  | Geometry II                                |         |
| MAT 595  | Topics in Mathematics                      |         |
| <b>Free Electives or Independent Study</b>   |  |         |
| May be replaced by any course from the four areas above or any other 500-level MAT, MTE, STA, or CSC course. |  |         |

<sup>1</sup> Indicates course satisfies a general education requirement.

<sup>2</sup> Or higher level STA course

<sup>3</sup> This course fulfills the general education Capstone requirement.

All math major courses must be passed with a C or better.

## Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Progress Report (DPR) via myWCU regularly. For more information, visit [wcupa.edu/DegreeProgressReport](http://wcupa.edu/DegreeProgressReport) (<http://wcupa.edu/degreeprogressreport/>).

The following is a sample suggested course sequence for this program; course offerings and availability are not guaranteed. Students should consult their academic advisor with any questions.

| Course  | Title  | Credits   |
|---|--|-----------|
| <b>Year One</b>   |  |           |
| <b>Fall</b>   |  |           |
| MAT 125   | Introduction to Statistics and Probability (recommended) | 3         |
| MAT 161   | Calculus I   | 4         |
| CSC 141   | Computer Science I                                       | 3         |
| SPK 230   | Business and Professional Speech Communication (SE)      | 3         |
| FYE 100X  | First Year Experience                                    | 4         |
| <b>Credits</b>  |  | <b>17</b> |
| <b>Spring</b>   |  |           |
| MAT 162   | Calculus II  | 4         |
| MAT 200   | The Nature of Mathematics                                | 3         |
| PHY 170   | Physics I  | 4         |
| WRT 120   | Effective Writing I                                      | 3         |
| or WRT 123  | or Effective Writing with Supplemental Writing Workshop  |           |
| Humanities Gen Ed   |  | 3         |
| <b>Credits</b>  |  | <b>17</b> |
| <b>Year Two</b>   |  |           |
| <b>Fall</b>   |  |           |
| MAT 261   | Calculus III   | 4         |
| MAT 311   | Linear Algebra   | 3         |
| PHY 180   | Physics II   | 4         |
| WRT 2XX   | 200-Level WRT Course                                     | 3         |
| Behavioral/Social Science Gen Ed                          |  | 3         |
| <b>Credits</b>  |  | <b>17</b> |
| <b>Spring</b>   |  |           |
| MAT 343   | Differential Equations                                   | 3         |
| Mathematics Elective <sup>3</sup>                         |  | 3         |
| Free Elective (W course MAT 401 recommended) <sup>2</sup> |  | 3         |
| Free Elective <sup>2</sup>                                |  | 3         |
| Free Elective <sup>2</sup>                                |  | 3         |
| <b>Credits</b>  |  | <b>15</b> |
| <b>Year Three</b>   |  |           |
| <b>Fall</b>   |  |           |
| MAT 411   | Algebra I  | 3         |
| MAT 421   | Mathematical Statistics I                                | 3         |
| Mathematics Elective <sup>3</sup>                         |  | 3         |
| IW Course   |  | 3         |
| Arts Gen Ed   |  | 3         |
| <b>Credits</b>  |  | <b>15</b> |
| <b>Spring</b>   |  |           |
| MAT 441   | Real Analysis I  | 3         |
| Algebra Elective  |  | 3         |
| Mathematics Elective <sup>3</sup>                         |  | 3         |
| JW Course   |  | 3         |
| Free Elective <sup>2</sup>                                |  | 3         |
| <b>Credits</b>  |  | <b>12</b> |
| <b>Year Four</b>  |  |           |
| <b>Fall</b>   |  |           |
| MAT 445   | Complex Variables  | 3         |
| ENG 371   | Technical Writing (W)                                    | 3         |
| Analysis Elective   |  | 3         |
| Humanities Gen Ed   |  | 3         |

|  |   |
|--|---|
| Free Elective (Foreign Language 201 recommended)   | 3 |
| <b>Credits</b>                                     |   |
| <b>15</b>  |   |
| <b>Spring</b>                                      |   |
| Applied Mathematics Elective                       | 3 |
| Behavioral/Social Science Gen Ed                   | 3 |
| Free Elective (MAT 499 recommended) <sup>1,2</sup> | 3 |
| Free Elective (Foreign Language 202 recommended)   | 3 |
| <b>Credits</b>                                     |   |
| <b>12</b>  |   |
| <b>Total Credits</b>                               |   |
| <b>120</b>   |   |

- <sup>1</sup> MAT 499 may be taken for variable credit and repeated for credit.
- <sup>2</sup> Must be approved by advisor.
- <sup>3</sup> Any courses in mathematics with course numbers above 311, with the exception of those courses with a primary focus on teacher education or those courses restricted to students majoring in early or middle grades education.