# Mathematical Sciences

**Department of Mathematical Sciences**

**Department Chair:**Rebecca Sparks

**Data Science Program Faculty: Professors** Abrahamson, Costa, Humphreys, La Ferla, Sparks, Teixeira, Zhou; **Associate Professors** Burke, Gall, Harrop, Kovac, Pinheiro, Ravenscroft; **Assistant Professors** Medwid, Wang

Students **must** consult with their assigned advisor before they will be able to register for courses.

*Note: Students cannot count toward the major more than two courses with grades below C-.*

Data Science B.S.

Course Requirements

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |
|  |  |  |  |
| MATH 245 | Principles of Data Science | 4 | F, Sp |
| MATH 314 | Calculus III | 4 | F, Sp |
| MATH 345 | Linear Models for Data Science | 4 | F |
| MATH 436 | Discrete Mathematics | 3 | F, Sp |
| MATH 441 | Introduction to Probability | 4 | F |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |
| CSCI 157 | Introduction to Algorithmic Thinking in Python | 4 | F, Sp |
| CSCI 428 | Machine Learning | 4 | Sp |
|  |   |  |  |
| CIS 455W | Database Programming | 4 | F, Sp |
|  | -Or- |  |  |
| CSCI 455 | Introduction to Databases | 4 | F |
|  |   |  |  |
|  |  |  |  |
| CIS 470 | Introduction to Data Analytics | 4 | F |
| CIS 472 | Data Visualization | 4 | As needed |
| ENGL 230W | Workplace Writing | 4 | F, Sp, Su |
| PHIL 207 | Technology and the Future of Humanity | 3 | F, Sp |

Subtotal: 65-66

Mathematics B.A.

**Department of Mathematical Sciences**

**Department Chair:** Rebecca Sparks

**Mathematics Program Faculty: Professors** Abrahamson, Costa, Humphreys, La Ferla, Sparks, Teixeira, Zhou; **Associate Professors** Burke, Christy, Gall, Harrop, Kovac, Pinheiro, ; **Assistant Professors** Medwid, Turki, Wang

Students **must** consult with their assigned advisor before they will be able to register for courses.

*Note: Students cannot count toward the major more than two courses with grades below C-.*

Course Requirements

Courses

Prior to enrolling in any mathematics course above 120, all students must have completed the College Mathematics Competency.

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |
| MATH 300W | Bridge to Advanced Mathematics | 4 | Sp |
| MATH 314 | Calculus III | 4 | F, Sp |
| MATH 315 | Linear Algebra | 4 | F |
| MATH 411 | Calculus IV | 4 | F (odd years) |
| MATH 416 | Ordinary Differential Equations | 4 | Sp (as needed) |
|  | -Or- |  |  |
| MATH 417 | Introduction to Numerical Analysis | 4 | Sp (as needed) |
| MATH 432 | Introduction to Abstract Algebra | 4 | Sp |
| MATH 441 | Introduction to Probability | 4 | F |
| MATH 461W | Seminar in Mathematics | 3 | Sp |

TWO COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 416 | Ordinary Differential Equations | 4 | Sp (as needed) |
|  | -Or- |  |  |
| MATH 417 | Introduction to Numerical Analysis | 4 | Sp (as needed) |
| MATH 418 | Introduction to Operations Research | 3 | Sp (even years) |
| MATH 431 | Number Theory | 3 | F, Sp |
| MATH 436 | Discrete Mathematics | 3 | F, Sp |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |

Cognates

CHOOSE Category A or B

ONE COURSE from

**Category A**

|  |  |  |  |
| --- | --- | --- | --- |
| CHEM 405 | Physical Chemistry I | 3 | F |
| CSCI 312 | Computer Organization and Architecture I | 4 | F, Sp |
| CSCI 422 | Introduction to Computation Theory | 4 | Sp (As needed) |
| CSCI 423 | Analysis of Algorithms | 4 | F (odd years), Sp |
| ECON 314 | Intermediate Microeconomic Theory and Applications | 4 | F |
| ECON 315 | Intermediate Macroeconomic Theory and Analysis | 4 | Sp |
| MGT 249 | Business Statistics II | 4 | F, Sp, Su |
| MKT 333 | Market Research | 4 | F, Sp |
| PHIL 305W | Intermediate Logic | 4 | Sp (even years) |

ONE COURSE from

**Category B**

|  |  |  |  |
| --- | --- | --- | --- |
| PHYS 101 | Physics for Science and Mathematics I | 4 | F, Sp, Su |
|  | -And- |  |  |
| CSCI 211 | Computer Programming and Design | 4 | F, Sp |
|  | -Or- |  |  |
| PHYS 102 | Physics for Science and Mathematics II | 4 | F, Sp, Su |

Total Credit Hours: 48-54

Mathematics Minor

Course Requirements

The minor in mathematics consists of a minimum of 21 credit hours (six courses), as follows:

ONE COURSE from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 209 | Precalculus Mathematics | 4 | F, Sp, Su |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |

and at least THREE additional mathematics courses at the 300-level or above, except MATH 409.

Prior to enrolling in any mathematics course above 120, all students must have completed the College Mathematics Competency.

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
| MATH 213 | Calculus II | 4 | F, Sp, Su |

Total Credit Hours: 21-24

Statistical Modeling Minor

Course Requirements

The minor in Statistical Modeling consists of a minimum of 20 credit hours (five courses), as follows:

Courses

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 212 | Calculus I | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 240 | Statistical Methods I | 4 | F, Sp, Su |
|  | -Or- |  |  |
| MATH 248 | Business Statistics I | 4 | F, Sp, Su |
|  |   |  |  |
| MATH 245 | Principles of Data Science | 4 | F, Sp |
| Math 345 | Linear Models for Data Science | 4 | F |
| MATH 445 | Advanced Statistical Methods | 4 | Sp |

Total Credit Hours: 20

Mathematical Studies M.A.

Admission Requirements

1. A completed application form accompanied by a $50 nonrefundable application fee.

2. Official transcripts of all undergraduate and graduate records.

3. A minimum cumulative grade point average of 3.00 on a 4.00 scale in undergraduate course work.

4. A minimum of 30 credit hours of courses beyond precalculus mathematics.

5. An official report of scores on the Graduate Record Examination or Miller Analogies Test.

6. Three letters of recommendation.

7. A plan of study approved by the advisor and appropriate dean.

**BA/MA in Mathematical Studies Admission Option:**
Undergraduate students matriculated at Rhode Island College can apply for conditional admission to the Master of Arts in Mathematical Studies program after completing 60 undergraduate credits. Students conditionally admitted to the M.A. program begin taking graduate courses after completing 90 undergraduate credits. Students who remain in good standing and continue to meet admission requirements upon completion of the bachelors degree will be granted full admission to the M.A. program. Application requirements remain the same as above with the following exceptions: The GRE General Exam will be waived for B.A./M.A. applications if the applicant has a 3.0 G.P.A. overall, and grades of B or higher in all courses required for admission to the M.A. program. Applicants must complete M300 and at least 6 of the required 12 math courses for the B.A. program prior to taking graduate level courses.

Course Requirements

CHOOSE concentration A or B below

A. Mathematics

FOUR COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 512 | Foundations of Higher Analysis | 3 | As needed |
| MATH 515 | Introduction to Complex Variables | 3 | As needed |
| MATH 519 | Set Theory | 3 | As needed |
| MATH 532 | Algebraic Structures | 3 | As needed |
| MATH 551 | Topics in Proof | 3 | As needed |

FOUR ADDITIONAL COURSES in mathematics for a minimum of 12 credits, chosen with advisor’s consent

TWO COURSES in a discipline approved by advisor and department for a minimum of 6 credits

Comprehensive Examination

Subtotal: 30

B. Mathematics for the Professions

THREE COURSES from

|  |  |  |  |
| --- | --- | --- | --- |
| MATH 512 | Foundations of Higher Analysis | 3 | As needed |
| MATH 515 | Introduction to Complex Variables | 3 | As needed |
| MATH 519 | Set Theory | 3 | As needed |
| MATH 532 | Algebraic Structures | 3 | As needed |
| MATH 551 | Topics in Proof | 3 | As needed |

THREE ADDITIONAL COURSES in mathematics for a minimum of 9 credits, chosen with advisor’s consent

FOUR COURSES in mathematics or a related discipline such as accounting, economics, finance, mathematics education, or pedagogy, for a total of 12 credits, chosen with advisor’s consent

Comprehensive Examination

Subtotal: 30