MATH 491 - Independent Study in Mathematics (1)

This course is open to students who have demonstrated superior ability in mathematics. Students select a topic and undertake concentrated research or creative activity mentored by a faculty member. This course may be repeated for credit once with a change in content.

Prerequisite: Consent of instructor, department chair and dean.

Offered: As needed.

MATH 509 - Mathematical Modeling (3)

This course covers various mathematical models including continuous-time models in population dynamics, applications of linear algebra to statistics and optimization including linear regression, linear programing, and other related topics.

Prerequisite: Graduate status or consent of department chair

Offered: As needed.

MATH 510 - Exploring Calculus: Renew, Revit, Reexamine (3)

A deeper analysis of the definitions, concepts and theorems of single variable calculus is presented. Classical and reform approaches are explored. Connections to higher mathematics are examined Prerequisite: Graduate status or consent of department chair

Offered: As needed.

MATH 512 - Foundations of Higher Analysis (3)

Fundamental concepts in the theory of calculus are presented. Topics include limits, continuity and uniform continuity, differentiation, the Riemann integral, sequences and series, and convergence criteria.

Prerequisite: Graduate status, MATH 300 or MATH 300W, and MATH 314.

Offered: As needed.

MATH 515 - Introduction to Complex Variables (3)

Techniques and concepts of the algebra and calculus of functions of one complex variable are studied, including trigonometric, exponential, and logarithmic functions.

Prerequisite: Graduate status, prior or concurrent enrollment in MATH 314.

Offered: As needed.

MATH 519 - Set Theory (3)

The foundations of set theory and logic are studied in the context of their application in the construction of number systems, from the natural numbers through the reals.

Prerequisite: Graduate status, MATH 300 or MATH 300W, MATH 314, MATH 432, or consent of department chair.

Offered: As needed.

MATH 522- Combinatorics (3)

The existence, construction, and properties of systems of finite sets whose arrangements satisfy various balance properties are explored. Topics may include combinatorial designs, cyclic construction methods and current research.

Prerequisite: Graduate status or consent of department chair

Offered: As needed.

MATH 528 - Topology (3)

Study is made of sets and sequences, various topological spaces, including metric, compactness, connectedness, curves, and mappings.

Prerequisite: Graduate status, MATH 300 or MATH 300W, and MATH 314.

Offered: As needed.

MATH 530- Advanced Linear Algebra (3)

Advanced topics in linear algebra are explored. Topics may include inner product spaces, self-adjoint operators, Jordan canonical form, and the spectral theorem

Prerequisite: Graduate status or consent of department chair

Offered: As needed.

MATH 532 - Algebraic Structures (3)

Selected topics in the development of groups, rings, modules, and fields are covered, including homomorphisms, permutation groups, basic Galois Theory, ring extension problems, and ideals.

Prerequisite: Graduate status, MATH 300 or MATH 300W, and MATH 314.

Offered: As needed.

MATH 540- Advanced Differential Equations (3)

Advanced topics in differential equations are explored. Topics may include systems of linear and nonlinear equations, boundary value problems, multiple solutions, numerical methods, stability, and current research.

Prerequisite: Graduate status or consent of department chair

Offered: As needed.

MATH 551 - Topics in Proof (3)

Varying topics in mathematical proof are examined, from number systems and functions to abstract spaces.

Prerequisite: Graduate status and consent of department chair.

Offered: As needed.

MATH 552 - Topics in Applied Mathematics (3)

Varying topics in applied mathematics are examined, from numerical and analytical investigations to modeling.

Prerequisite: Graduate status and consent of department chair.

Offered: As needed.

MATH 553 - Topics in Pure Mathematics (3)

Varying topics in pure mathematics are examined, from number theory and advanced geometries to abstract algebra.

Prerequisite: Graduate status and consent of department chair.

Offered: As needed.

Graduate Degree Programs

|  |  |  |
| --- | --- | --- |
| **Major** | **Degree** | **Concentration** |
| Art | M.A. | Art Education |
| Art | M.A.  | Media Studies |
| Art Education\* | M.A.T. |   |
| Biology | M.A. |   |
| English | M.A. | Creative Writing |
| History | M.A. |   |
| Justice Studies | M.A. |   |
| Mathematical Studies | M.A. | Mathematics |
|   |  |  |
| Music Education\* | M.A.T. |   |
| Music Education\* | M.M.Ed. |   |
| Psychology | M.A. |   |

\*Art education and music education are designed for students seeking grades pre-K–12 teaching certification.

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.

 CORE COURSES

|  |  |  |  |
| --- | --- | --- | --- |
| 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 522 | Combinatorics | 3 | As needed |
| MATH 528  | Topology | 3 | As needed |
| MATH 530 | Topics in Linear Algebra | 3 | As needed |
| MATH 532 | Algebraic Structures | 3 | As needed |
| MATH 551 | Topics in Proof | 3 | As needed |

THREE core courses chosen with the program director's consent.

9-12 additional credits in Mathematics at an appropriate level, chosen with program director's consent.

9-12 credits in Mathematics OR related disciplines chosen with Program Director's consent. . Choices may include but are not limited to course in Mathematics Education, Computer Science, Physics, Finance or Economics.

Comprehensive Examination

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Total Credit Hours: 30-33