MATHEMATICS (MATH)

MATH 0--. MATH-LOWER DIVISION. (1-10 Credits)
Lower Level Coursework in Mathematics
Level: Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Transfer
Schedule type(s): Lecture
Area(s) of Inquiry: None

MATH 1--. MATH-UPPER DIVISION. (1-10 Credits)
Upper Level Coursework in Mathematics
Level: Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Transfer
Schedule type(s): Lecture
Area(s) of Inquiry: None

MATH 017. MATH PATHWAYS. (3 Credits)
Math Pathways focuses on developing an understanding of how data and mathematical tools can be employed to inform citizens about real-world situations. The course focuses on three broad themes: (1) quantitative thinking and reasoning, (2) understanding data analysis, and (3) mathematical modeling with technology tools. Students will learn the foundational ideas in each of these areas and explore real-world applications. Math Pathways is a mathematics course for liberal arts students who would like to fulfill the quantitative AOI requirement and for business students who are preparing to take business calculus. Students wishing to take additional mathematics before precalculus can also enroll in this course.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 020. PRE-CALCULUS: ALGEBRA AND TRIGONOMETRY. (0-4 Credits)
This course is designed for students who intend to continue their education in mathematics, science, or other math-related areas, or who are interested in learning mathematics as a part of their total education. In this course, you will have the opportunity to explore and study functions such as: polynomial, radical, absolute value, rational, exponential, and logarithmic, as well as, trigonometry and trigonometric functions comprehensively.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Discussion/Recitation, Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 024. STRUCTURE OF MATHEMATICS FOR ELEMENTARY EDUCATION I. (3 Credits)
Basic concepts and structure of whole numbers, integers, rational numbers, decimals, and real numbers and operations on these numbers as they relate to the K-6 curriculum. Also proportional reasoning, algebraic reasoning, and statistics appropriate to the elementary school curriculum are discussed. Restricted to elementary education majors or middle school endorsement. Prerequisite: Completion of high school mathematics through Algebra II/Geometry.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment is limited to students with an area(s) of study in Elementary Teacher Educ, Elementary Education, Secondary Education or Secondary Teacher Education.

Enrollment limited to students in the Education college.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 025. STRUCTURE OF MATHEMATICS FOR ELEMENTARY EDUCATION II. (3 Credits)
Basic concepts and structure of number theory, geometry, problem solving and measurement as they relate to the K-6 curriculum. Restricted to elementary education majors, or middle school endorsement. Prereq: Completion of high school mathematics through Algebra II/Geometry.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment is limited to students with an major in Middle School, Middle Sch Math, 5-8 or Elementary Teacher Educ.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Critical Thinking, Quantitative

MATH 028. BUSINESS CALCULUS. (3 Credits)
Brief algebra review, data analysis, limits, derivatives, integration, applications to business.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 050. CALCULUS I. (3 Credits)
Very brief review of algebra, logarithms, and trigonometry; functions; introduction to continuity, limits, differentiation, and integrals, with applications. Prereq.: MATH 020 or equivalent pre-calculus course.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 054. DISCRETE MATHEMATICS. (3 Credits)
Number systems, algorithms, set theory, logic, Boolean algebra, functions, combinatorics, probability, graph theory. Prereq.: MATH 20 or equivalent.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020 or MATH 050 or MATH 070
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 061. GEOMETRY FOR 6-12TH GRADE TEACHERS. (3 Credits)
This course is designed to develop students' mathematical knowledge for teaching geometry. Students will deepen their understanding of topics in Euclidean Geometry, including the Triangle Inequality, points of concurrency in a triangle, special properties of quadrilaterals, geometric transformations, similarity, symmetry and tessallations, the Pythagorean Theorem, area and perimeter, and volume and surface area. Students will learn to use dynamic geometry software (DGS) in their exploration of these topics, and will learn to develop and critique geometric proofs. A strong emphasis will be placed on considering the pedagogical implications for teaching these topics, and how to use DGS to enhance students' leaning.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020
Corequisite(s): None
Restrictions:
Students with a classification of Freshman may **not** enroll.

Enrollment is limited to students with an major in Computer Science, Sped: Multi Spec: Elem, Mathematics, Math for Secondary Education or Secondary Teacher Education.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 062. STATISTICS AND PROBABILITY FOR 6-12TH GRADE TEACHERS. (3 Credits)
This course is designed to equip students, who are preparing to teach middle or high school mathematics, with the knowledge needed to effectively and confidently teach probability and statistics topics in alignment with national standards and learning goals. To achieve this, the course is designed to increase both students' content and pedagogical knowledge of statistics and probability. The structure of the course is based upon in-class activities, discussions, exams, and projects with significant preparation required outside of class.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020
Corequisite(s): None
Restrictions:
Students with a classification of Freshman may **not** enroll.

Enrollment limited to students in the Arts & Sciences or Education colleges.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Critical Thinking, Quantitative

MATH 063. ALGEBRA/MODELING FOR 6-12TH GRADE TEACHERS. (3 Credits)
The subject matter of the course, algebra and mathematical modeling, will be grounded in experiences that arise in the and pedagogical knowledge with a focus on the use of context of teaching in order to simultaneously build content activities will span the content required by the Common real-world situations and technology tools. The choice of Core Standards of Mathematics for middle and high school with connections to more advanced content. Students will develop essential understandings, learn how to use manipulatives and technology, explore and analyze curricular resources, build an awareness of learning progressions, discuss common student challenges and effective ways to address them, and create tasks and lessons that are engaging to students through use of real-world applications and explorations. Restricted to education majors.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 020
Corequisite(s): None
Restrictions:
Enrollment is limited to students with an area(s) of study in 5-12, Mathematics, Elementary Teacher Educ, Sped: Multi Spec: Elem, Math for Secondary Education, Secondary Teacher Education, STEM Educatin or Teacher Effectiveness-Prof Dev.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 064. TUTORING IN MATHEMATICS & COMPUTER SCIENCE. (1 Credit)
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 050
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture
Area(s) of Inquiry: None

MATH 070. CALCULUS II. (3 Credits)
Advanced applications of differentiation; advanced techniques and applications of integration; simple examples of differential equations. Prereq.: Math 50.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 050
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 080. LINEAR ALGEBRA. (3 Credits)
Systems of linear equations; vectors, linear independence, linear transformations; matrix operations, inverse of a matrix, determinants; null and column space of a matrix, rank; general vector spaces, basis of a vector space, dimension; eigenvalues and eigenvectors, diagonalization, orthogonality; applications. Prereq.: MATH 50.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 050
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 099. INDEPENDENT STUDY. (1-3 Credits)
Directed individual study in areas related to the student's needs or interest. Prereq.: Consent of department.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Web Instructed
Area(s) of Inquiry: None

MATH 100. CALCULUS III. (3 Credits)
Infinite series and sequences, power series, and Taylor series. Plane curves; introduction to limits, continuity, differentiation, and integration for functions of several variables. Prereq.: Math 70
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Quantitative

MATH 101. MATHEMATICS REASONING. (3 Credits)
Logic; sets and mappings; methods of proof including direct and indirect proofs, induction and Delta-Epsilon arguments; axiomatic systems. Prereq.: Math 70, 80. Note: This course is a prereq. for MATH 150, 153, 155, 157, 176, 184, and 187.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070 and MATH 080 (may be taken concurrently)
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Critical Thinking

MATH 110. MULTIVARIATE CALCULUS. (3 Credits)
Vectors in n-space; calculus of functions from n-space to m-space.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 100
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 120. APPLIED DIFFERENTIAL EQUATIONS I. (3 Credits)
Ordinary differential equations; systems of differential equations. Fourier series, integrals and harmonic analysis, partial differential equations, orthogonal functions. Bessel functions. Legendre functions. Prereq.: Math 080 and Math 100.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070 and MATH 080 and MATH 100 (may be taken concurrently)
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 121. APPLIED DIFFERENTIAL EQUATIONS II. (3 Credits)
Continuance of MATH 120. Prereq.: MATH 080, MATH 100, and MATH 120.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 120 and MATH 110 (may be taken concurrently)
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 125. MATHEMATICS MODELING. (3 Credits)
The construction, analysis and interpretation of mathematical models. Examples are drawn from a variety of areas. Student projects are required. Prereq.: MATH 70, 80.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): CS 065 and MATH 070 and MATH 080
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 126. INDUSTRIAL MATHEMATICS. (3 Credits)
This research-intensive course pits students, in small groups, against truly realworld problems provided by industrial partners. The content knowledge of the course is determined by the methods needed in order to tackle the problems under investigation and may include modeling, computer programming, linear algebra, differential equations, optimization, and statistics.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 125
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lab, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 127. INTRODUCTION TO GAME THEORY. (3 Credits)
Game theory is the logical analysis of situations of conflict and cooperation. Topics will include zero-sum games and non-zero-sum two-person games, n person games, applications to economics, politics and nature. Pre-requisite: Math 70 or Math 80 or consent of instructor.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070 and MATH 080
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 130. PROBABILITY FOR ANALYTICS. (3 Credits)
An introduction to the concepts of probability that form the foundation for analytics practice. Descriptive statistics, data visualization, univariate discrete and continuous probability distributions, confidence intervals and one-sample hypothesis testing. Applies R and SAS skills.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070 and STAT 040
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 131. INTRODUCTION TO PROBABILITY I. (3 Credits)
An introduction to probability concepts, including definition of probability; independence; conditional probability; random variables; specific discrete and continuous probability distributions; multivariate random variables; moments and moment generating functions; functions of random variables; sampling distributions; and central limit theorem
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070
Corequisite(s): MATH 131L
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 131L. INTRODUCTION TO PROBABILITY LAB I. (0.5 Credits)
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): MATH 131
Restrictions: None
Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lab, Web Instructed
Area(s) of Inquiry: None

MATH 132. INTRODUCTION TO PROBABILITY II. (3 Credits)
Continuation of MATH 131. The POISSON process and its relation to the exponential distribution. Classifying and creating discrete and continuous distributions; frequency and severity with coverage modifications; aggregate loss models and ruin theory. Prereq: MATH 131 (ACTS 131). Cross-listed with ACTS 132.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): STAT 131 or MATH 131
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture
Area(s) of Inquiry: None

MATH 139. THEORY OF COMPUTATION. (3 Credits)
Theoretical foundations of computing. Introduction to formal grammars, languages and auomata theory. Mathematical analysis of the fundamental power and limitations of computing devices. Applications to pattern matching, problem specification, programming languages and compilers. Prereqs: CS 065 and either MATH 054 or MATH/CS 150.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): CS 065 and (MATH 054 or MATH 101)
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 140. COOPERATIVE EDUCATION. (1-3 Credits)
Students who are in a work environment related to the major field of study may receive credit for applications of classroom knowledge to their job. The student meets regularly with the adviser to determine appropriate assignments. May be repeated up to a maximum of eight hours of credit. (Graded on a credit/no credit basis). Prereq.: At least junior standing or consent of instructor.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Students with a classification of Freshman or Sophomore may **not** enroll.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 144. TOPICS IN MATHEMATICS AND COMPUTER SCIENCE EDUCATION. (3 Credits)
This course provides a broad overview of mathematics and computer science teaching in k-12 school settings. The first half of the course focuses on developing a deep understanding of best teaching and student learning practices including reading current and historical research on topics such as equity, assessment principles, and how culturally relevant ways of learning and knowing are valued within curriculum. The second half of the course consists of analyzing current K-12 mathematics and computer science content and process standards in terms of curricular materials and assessments. By incorporating learnings from the first half of the course, students will create their own situated vision for teaching school mathematics and computer science.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment is limited to students with an major in Elementary Teacher Educ, Elementary Education, Math for Secondary Education, Secondary Education or Secondary Teacher Education.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 145. METHODS OF TEACHING SECONDARY MATHEMATICS. (3 Credits)
Instructional strategies and material for teaching secondary school mathematics. Restricted to mathematics education majors. Prereq.: Consent of instructor.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment limited to students with the Admitted to Teacher Education attribute.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 148. COUNTING WITH COMBINATORICS. (3 Credits)
An introduction to enumerative combinatorics. This course examines techniques for enumerating and counting a variety of combinatorial objects including subsets, multisets, lists, permutations, compositions, and partitions. More advanced topics include the twelve-fold way, the principle of inclusion-exclusion, and generating functions. Prereq.: Math 101.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture
Area(s) of Inquiry: None

MATH 150. GRAPH THEORY. (3 Credits)
An introduction to the structural theory of graphs and networks with applications to computer science. Topics may include basic graph families and parameters, algorithms, matchings, connectivity, flows and networks, traversability, planarity, and colorings.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101 and CS 065
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 153. MODERN GEOMETRY. (3 Credits)
A rigorous approach to Euclidean and non-Euclidean geometries from a general, axiomatic point of view. Prereq.: MATH 101
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 155. ABSTRACT ALGEBRA I. (3-4 Credits)
An introduction to group theory, including symmetric groups, dihedral groups, cyclic groups, homomorphisms and isomorphisms, normal subgroups, quotient groups, Noether's isomorphism theorems. Prereq.: MATH 101.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 156. ABSTRACT ALGEBRA II. (3 Credits)
An introduction to rings, fields, and advanced group theory. Topics may include Groebner bases, field extensions, Galois theory, cryptography, coding theory, and Boolean algebras. Prereq.: MATH 155.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 155
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 157. HISTORY OF MATHEMATICS. (3 Credits)
An overview of the evolution of mathematics from ancient times through Newton and Leibniz. The conceptual development of mathematics will be emphasized. Prereq.: MATH 101
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: Historical Foundations

MATH 165. INTRODUCTION TO NUMERICAL ANALYSIS. (3 Credits)
Error analysis, iterative methods for solving nonlinear equations, direct and iterative methods for solving linear systems, approximation of functions, derivatives, integrals. Prereq.: CS 65, MATH 80 and 100. Crosslisted with CS 165.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): CS 065 and MATH 080 and MATH 100
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 176. ADVANCED LINEAR ALGEBRA. (3 Credits)
Hermitian, unitary, normal, positive definite and nonnegative matrices; LU, QR and Choleski factorizations; equivalence, similarity, congruence and their respective canonical forms; norms; Schur triangular form, Jordan canonical form; applications. Prereq.: MATH 101.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 184. INTRODUCTION TO REAL ANALYTICAL MATHEMATICS I. (3 Credits)
Algebraic and topological properties of the real line. Limits, continuity, differentiation. Riemann integration, series. Prereq.: MATH 100, 101
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 110 and MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 185. INTRODUCTION TO REAL ANALYSIS II. (3 Credits)
Continuance of MATH 184. Prereq.: MATH 184.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 184
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture
Area(s) of Inquiry: None

MATH 187. COMPLEX ANALYSIS. (3 Credits)
Algebraic and topological properties of the complex plane. Theory of analytic functions. Application. Prereq.: MATH 100, 101.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 110 and MATH 101
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 191. MATHEMATICS CAPSTONE. (1,3 Credits)
This is a course with revolving topics designed to build upon what students learn in their major. This course is typically taken in the student's final semesters at Drake after they have completed the majority of their required courses. This course will include a research project that can take several forms, for example a research paper or a software package. A second outcome is a presentation of their work to the students and faculty of the department, usually during the last two weeks of the semester.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment limited to students with a classification of Junior or Senior.

Enrollment is limited to students with an major in Mathematics.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 192. MATHEMATICS SECONDARY EDUCATION CAPSTONE. (1 Credit)
The purpose of a capstone is for students to undertake an independent project that applies and synthesizes what they have learned in their major. This course should be taken prior to student teaching and may be taken in the second semester of the junior year. One outcome will be a written project that can take several forms, for example a research paper, an educational software package, or lesson plans. A second outcome is a presentation of their work to the students and faculty of the department, usually during the last two weeks of the semester.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment limited to students with a classification of Junior or Senior.

Enrollment is limited to students with an major in Secondary Educ: Mathematics.

Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 195. TOPICS IN MATHEMATICS. (0-3 Credits)
Seminars in selected topics.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 050
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lab, Lecture, Web Instructed
Area(s) of Inquiry: None

MATH 199. INDEPENDENT STUDY. (1-3 Credits)
Directed individual study in areas related to the student's needs or interest. Prereq.: Consent of department.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Web Instructed
Area(s) of Inquiry: None

MATH 230. INDEPENDENT STUDY. (1-3 Credits)
Level: Graduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Undergraduate level students may **not** enroll.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Web Instructed
Area(s) of Inquiry: None