MATH 5L  Foundational Mathematics B  1 Unit  
**Prerequisite:** Credit in Math 031 or GE Math Ready with Support.  
**Corequisites:** MATH 105.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics in support of general education mathematics. This course is a supplemental requirement for Math Ready with Support students required to enroll in designated general education courses. 3 hours laboratory. (005498)  
**Grade Basis:** ABC/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 7L  Foundational Mathematics B  1 Unit  
**Prerequisite:** Credit in Math 031 or GE Math Ready with Support.  
**Corequisites:** MATH 107.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics in support of general education mathematics. This course is a supplemental requirement for Math Ready with Support students required to enroll in designated general education courses. 3 hours laboratory. (022081)  
**Grade Basis:** ABC/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 10L  Foundational Mathematics B  1 Unit  
**Prerequisite:** Credit in Math 031 or GE Math Ready with Support.  
**Corequisites:** MATH 110.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics in support of general education mathematics. This course is a supplemental requirement for Math Ready with Support students required to enroll in designated general education courses. 3 hours laboratory. (022082)  
**Grade Basis:** ABC/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 16L  Foundational Mathematics B  1 Unit  
**Prerequisite:** Credit in Math 031 or GE Math Ready with Support.  
**Corequisites:** MATH 116.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics in support of general education mathematics. This course is a supplemental requirement for Math Ready with Support students required to enroll in designated general education courses. 3 hours laboratory. (022083)  
**Grade Basis:** ABC/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 31B  Foundational Mathematics A  1 Unit  
**Prerequisite:** GE Math Ready with Support and Early Start Program.  
**Corequisites:** BIOL 102.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics. Satisfactory completion of this course fulfills the prerequisite for enrollment in Math 005L, MATH 007L, MATH 010L, and MATH 016L. This course is a supplemental requirement for Math Ready with Support, Early Start Program Required students required to enroll in designated general education courses. 3 hours laboratory. (022087)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 31G  Foundational Mathematics A  1 Unit  
**Prerequisite:** GE Math Ready with Support and Early Start Program.  
**Corequisites:** ERTH 101.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics. Satisfactory completion of this course fulfills the prerequisite for enrollment in Math 005L, MATH 007L, MATH 010L, and MATH 016L. This course is a supplemental requirement for Math Ready with Support, Early Start Program Required students required to enroll in designated general education courses. 3 hours laboratory. (022086)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate  

MATH 31N  Foundational Mathematics A  1 Unit  
**Prerequisite:** GE Math Ready with Support and Early Start Program.  
**Corequisites:** SCED 101.  
**Typically Offered:** Fall and spring  
Foundational level California Common Core State Standards mathematics topics. Satisfactory completion of this course fulfills the prerequisite for enrollment in Math 005L, MATH 007L, MATH 010L, and MATH 016L. This course is a supplemental requirement for Math Ready with Support, Early Start Program Required students required to enroll in designated general education courses. 3 hours laboratory. (005493)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 1 unit  
**Course Attributes:** Pre-Collegiate
**MATH 31P  Foundational Mathematics A**  1 Unit
Prerequisite: GE Math Readiness with Support and Early Start Program.
Corequisites: PSCC 101.
Typically Offered: Fall and spring
Foundation level California Common Core State Standards mathematics topics. Satisfactory completion of this course fulfills the prerequisite for enrollment in Math 005L, MATH 007L, MATH 010L, and MATH 016L. This course is a supplemental requirement for Math Readiness with Support, Early Start Program Required students required to enroll in designated general education courses. 3 hours laboratory. (022085)

Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 1 unit
Course Attributes: Pre-Collegiate

**MATH 101 Patterns of Mathematical Thought**  3 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
An informal approach to mathematics designed to bring an appreciation and workable knowledge of the subject to non-majors. Not acceptable for a mathematics major or minor. 1 hour discussion, 2 hours lecture. (005514)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

**MATH 105 Introduction to Statistics**  3 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
Summary of numerical data, distributions, linear regression, and introduction to statistical inference. Statistical software is used. 1.5 hours discussion, 1.5 hours lecture. (005501)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

**MATH 107 Finite Mathematics for Business**  3 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
Solutions to systems of linear equations, matrices, linear programming, combinatorics, probability, binomial and normal distributions. 1.5 hours discussion, 1.5 hours lecture. (005521)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

**MATH 108 Statistics of Business and Economics**  3 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
Descriptive statistics, sampling theory, statistical inference and tests of hypotheses, analysis of variance, chi-square tests, simple regression and correlation, and multiple regression and correlation. 1.5 hours discussion, 1.5 hours lecture. (001042)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

**MATH 109 Survey of Calculus**  4 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready; MATH 118 and MATH 119 (or equivalent) with a C- or higher, or a qualifying score on the department administered calculus readiness assessment in addition to high school trigonometry and precalculus with a C- or higher.

Typically Offered: Fall and spring
This course covers the fundamental concepts and techniques of differential and integral calculus with an introduction to differential equations. Emphasis on applications from the Life Sciences. This course is not intended for majors in mathematics, physics, chemistry, or engineering. No credit for students with credit in MATH 120. A score that meets department guidelines on a department administered calculus readiness exam must be achieved by those who claim high school equivalence. 4 hours discussion. (005512)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

**MATH 109X Survey of Calculus Problem Solving Session**  1 Unit  GE
Corequisites: MATH 109.

Typically Offered: Fall and spring
This is a 1-unit supplement to Survey of Calculus, MATH 109. This is structured as a workshop designed to complement MATH 109 students with broader and deeper applications of calculus, providing students with opportunities for additional problem-solving and skill-building in a student-centered collaborative environment. 3 hours independent study. (021280)

Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

**MATH 110 Concepts and Structures of Mathematics**  3 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
Structure of the real number system, operations on real numbers, number theory. Not acceptable for a mathematics major or minor. 3 hours discussion. (005522)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

**MATH 116 College Algebra**  4 Units  GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
This course covers advanced algebra concepts beyond the scope of Intermediate Algebra. The topics include algebraic simplifying, conics, theory and solution of equations and inequalities, systems of equations, linear functions, exponential and logarithmic functions, polynomial and rational functions, binomial expansion, and partial fractions. 4 hours lecture. (021954)

General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division
MATH 117 Hands-On Lab, Mathematics 2 Units
Prerequisite: MATH 110.
Corequisites: MATH 210 or faculty permission.
Typically Offered: Fall and spring
The Hands-On Lab for Mathematics provides a rich, sustained, and
guided teaching experience for undergraduate students preparing
to be elementary or middle school teachers. By developing, refining,
and repeatedly teaching a lesson aligned to California mathematics
standards, prospective teachers gain insights into the complexities of
teaching mathematics content. In addition, prospective teachers engage
in Lesson Study with the teachers for these children, thus acquiring
experience in a collegial relationship with practicing professionals. 2
hours seminar. (020430)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 118 Trigonometry 3 Units GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
Trigonometric functions, graphs, identities and conditional equations,
logarithms, solutions of triangles, and complex numbers. 3 hours
discussion. (005500)
General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 119 Precalculus Mathematics 4 Units GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready, and
either 1/2 year of high school trigonometry or MATH 118 (may be taken
concurrently).
Typically Offered: Fall and spring
Functions and graphs, including polynomial, rational, exponential,
logarithmic, and trigonometric functions. Systems of equations and
inequalities, polar and parametric equations, complex numbers, and
analytic trigonometry. 4 hours discussion. (005504)
General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 119X Precalculus Problem Session 1 Unit
Prerequisite: Faculty permission.
Corequisites: MATH 119.
Typically Offered: Fall and spring
Designed to supplement MATH 119 with additional applications. Provides
the student with the opportunity for additional assistance in developing
problem-solving abilities. 3 hours independent study. (005505)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 120 Analytic Geometry and Calculus 4 Units GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready, MATH 118
and MATH 119 (or equivalent) with a C- or higher, or a qualifying score on
the department administered calculus readiness assessment in addition
to high school trigonometry and precalculus with a C- or higher.
Typically Offered: Fall and spring
Limits and continuity. The derivative and applications to related
rates, maxima and minima, and curve sketching. Transcendental
functions. An introduction to the definite integral and area. 4 hours
discussion. (005506)
General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 120X Calculus Problem Session 1 Unit
Prerequisite: Faculty permission.
Corequisites: MATH 120.
Typically Offered: Fall and spring
Designed to supplement MATH 120 with additional applications of
introductory calculus. Provides the student with the opportunity for
additional assistance in developing problem-solving abilities. 3 hours
independent study. (005510)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 121 Analytic Geometry and Calculus 4 Units
Prerequisite: MATH 120.
Typically Offered: Fall and spring
The definite integral and applications to area, volume, work, differential
equations, etc. Sequences and series, vectors and analytic geometry
in 2 and 3-space, polar coordinates, and parametric equations. 4 hours
discussion. (005507)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 121X Calculus Problem Session 1 Unit
Prerequisite: Concurrent enrollment in MATH 121, faculty permission.
Typically Offered: Fall and spring
Designed to supplement MATH 121 with additional applications and
expanded explanations of concepts encountered in second-semester
calculus. Provides the student with the opportunity for additional
assistance in coming to an understanding of the concepts of calculus. 3
hours independent study. (005511)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 125 Advanced Number and Operation 3 Units
Prerequisite: Successful completion of high school precalculus,
concurrent enrollment in MATH 118 or 119, or faculty permission.
Typically Offered: Fall only
Investigate number and operation through calculation and abstraction,
find patterns and relationships through computation, develop and
test mathematical conjectures, and develop an appreciation of proof
and an ability to make mathematical arguments. Basic concepts from
Number Theory are explored, culminating in proof of the Fundamental
Theorem of Arithmetic and related theorems in other number sets. 3
hours discussion. (021846)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division
MATH 130 Introduction to R 1 Unit
Typically Offered: Fall and spring
This accelerated short-course is designed as a primer to get the complete novice up and running with the basic knowledge of how to use the statistical programming language R. Target audience is anyone who wants to become the boss of their own data and conduct their own analysis. We cover how to get data into R, how to manipulate it into an analyzable format, and how to create informative plots. Emphasis is placed on reproducibility and literate programming. The course culminates with a data exploration project. This course requires the use of a laptop computer and appropriate software. Typically offered as 3 hour discussion for 5 weeks. 1 hour discussion. (021774)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division; Laptop required

MATH 185 Data Analytics for Social Good 3 Units GE
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
This course introduces students how to start harnessing the power of data to intelligently cope with the requirements of citizenship, employment, and family to be prepared for a healthy, happy and productive life. Students practice collecting and wrangling data into a usable form, visualizing large data sets to discover patterns, representing data in a meaningful way, exploring varying interpretations of the data and results, and discussing potentials for misuse and abuse. This course promotes critical reflection on the ethical, social, cultural, and political dimensions of data as well as providing direct hands on experience with both spreadsheets, and the programming language R. Students from all majors are welcome, no prior programming experience is expected. 1 hour activity, 2 hours lecture. (022285)
General Education: Quantitative Reasoning (B4)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division; Laptop required

MATH 195 Project MATH Seminar Year 1 1 Unit
Typically Offered: Fall and spring
The Project M.A.T.H. Seminar - Year 1 is a biweekly seminar for students in their first year of Project M.A.T.H., an innovative program for students interested in becoming secondary mathematics teachers. Students work with mentor teachers, prepare and present lessons, and participate in a structured early field experience. Completion of the seminar series satisfies the Credential Program's Early Field Experience requirement. 1 hour seminar. (020431)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

MATH 198 Special Topics 1-3 Units
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. 3 hours discussion. (005528)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

MATH 199 Special Problems 1-3 Units
Typically Offered: Fall and spring
This course is an independent study of special problems offered for 1.0-3.0 units. 9 hours supervision. (020782)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

MATH 210 Concepts and Structures of Mathematics 3 Units
Prerequisite: MATH 110.
Typically Offered: Fall and spring
Problem-solving, probability and statistics, measurement and the metric system, geometry. Not acceptable for a mathematics major or minor. 3 hours discussion. (005523)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 217 Discrete Mathematics 3 Units
Prerequisite: GE Mathematics/Quantitative Reasoning Ready, CSCI 111 with a grade of C or higher (may be taken concurrently), MATH 119 (or equivalent).
Typically Offered: Fall and spring
Offers an intensive introduction to discrete mathematics as used in computer science. Topics include sets, relations, propositional and predicate logic, basic proof methods including mathematical induction, digital logic circuits, complexity of algorithms, elementary combinatorics, and solving linear recurrence relations. 3 hours discussion. (005550)
Cross listing(s): CSCI 217
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 220 Analytic Geometry and Calculus 4 Units
Prerequisite: MATH 121.
Typically Offered: Fall and spring
Vector functions and space curves. Functions of several variables, partial derivatives, and multiple integrals. Vector calculus line integrals, surface integrals, divergence/curl, Green's Theorem, Divergence Theorem, and Stokes' Theorem. 4 hours discussion. (005508)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 220X Calculus Problem Session 1 Unit
Corequisites: MATH 220.
Typically Offered: Fall and spring
Designed to supplement MATH 220 with broader and deeper applications of calculus, providing students with opportunities for additional problem-solving skill building. Twenty hours activity minimum for credit, but 40 hours are available to students. 3 hours independent study. (020358)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division
MATH 225  Algebra Functions, Real and Complex Number Systems  3 Units
Prerequisite: MATH 125.
Typically Offered: Spring only
This course focuses on developing your abilities in making sense of algebraic manipulation in the context of functions, polynomial rings, and matrices. The course and the classroom are structured as a supportive, collaborative learning environment in which mathematical discourse is valued and exploration encouraged. You will investigate algebra and polynomials through calculation and abstraction, find patterns and relationships through computation, develop and test mathematical conjectures, and develop an appreciation of proof and an ability to construct mathematical arguments. More advanced concepts from Number Theory are explored, culminating in proofs of the Unique Prime Factorization Theorem and the Division Algorithm for different rings. 3 hours discussion. (021953)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 230  An Introduction to Computational Mathematics  3 Units
Prerequisite: MATH 121, no previous computer experience required.
Typically Offered: Fall only
An introduction to the use of mathematical computer software. This course provides an introduction to a programming environment, preparing math majors to use computers to explore and solve varied math problems. The software used in this class depends on the instructor and may be chosen from Mathematica, GP/PARI, GAP, SAS, R, etc. This course satisfies the computer literacy requirement for mathematics majors. 3 hours discussion. (005526)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 9 units
Course Attributes: Lower Division

MATH 235  Elementary Linear Algebra  3 Units
Prerequisite: MATH 121.
Typically Offered: Fall and spring
Matrices, determinants, cartesian n-space (basis and dimension of a subspace, rank, change of basis), linear transformations, eigenvalues. Numerical problems will be emphasized. 3 hours discussion. (005553)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 241  Secondary Math Early Field Experience  1 Unit
Typically Offered: Fall and spring
This seminar and the associated CAVE field experience give prospective teachers early exposure to issues relevant to the profession of teaching secondary mathematics. In particular, the experience helps these future teachers develop a deeper understanding of the K-12 mathematics curriculum, understand connections between their university subject matter preparation and K-12 academic content, and reflect on developmental and social factors that affect K-12 students’ learning of mathematics. 1 hour seminar. (020432)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 260  Elementary Differential Equations  4 Units
Prerequisite: MATH 121.
Typically Offered: Fall and spring
First order separable, linear, and exact equations; second order linear equations, Laplace transforms, series solutions at an ordinary point, systems of first order linear equations, and applications. 4 hours discussion. (005509)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

MATH 260X  Elementary Differential Equations Problem Session  1 Unit
Corequisites: MATH 260.
Typically Offered: Fall and spring
Designed to supplement MATH 260 with broader and deeper applications of differential equations, providing the student with opportunities for additional problem-solving skills. A minimum of 20 hours of activity are required to earn credit for the class; forty hours are available. 3 hours independent study. (020315)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

MATH 290  Mathematics and Statistics Tutoring  1 Unit
Corequisites: Concurrent enrollment in a course offered through the Dept of Mathematics Statistics at CSU, Chico.
Typically Offered: Fall and spring
This course provides supplemental mathematics statistics tutoring. 3 hours independent study. (020823)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 8 units
Course Attributes: Lower Division

MATH 295  Project M.A.T.H. Seminar Year 1  1 Unit
Prerequisite: MATH 195.
Typically Offered: Fall and spring
The Project M.A.T.H. Seminar - Year 1 is the continuation of a biweekly seminar for students in Project M.A.T.H., an innovative program for students interested in becoming secondary mathematics teachers. Students work with mentor teachers, prepare and present lessons, and participate in a structured early field experience. They also take on a leadership role in the seminar. Completion of the seminar series satisfies the Credential Program's Early Field Experience requirement. 1 hour seminar. (020433)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

MATH 295  Project M.A.T.H. Seminar Year 2  1 Unit
Prerequisite: MATH 195.
Typically Offered: Fall and spring
The Project M.A.T.H. Seminar - Year 2 is the continuation of a biweekly seminar for students in Project M.A.T.H., an innovative program for students interested in becoming secondary mathematics teachers. Students work with mentor teachers, prepare and present lessons, and participate in a structured early field experience. They also take on a leadership role in the seminar. Completion of the seminar series satisfies the Credential Program’s Early Field Experience requirement. 1 hour seminar. (020433)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

MATH 298  Special Topics  1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 0 hours supervision. (021615)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

University Catalog 2022-2023  5
MATH 299  Special Problems  1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Inquire at department
This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours supervision. (021629)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

MATH 300  Undergraduate Mathematics Seminar  2 Units
Prerequisite: GE Mathematics/Quantitative Reasoning Ready.
Typically Offered: Fall and spring
This course is designed to expose you to mathematics not normally covered in your regular curriculum. Guest speakers are drawn from the ranks of our faculty, including other disciplines, our students, and industry. Talks are interactive, participatory, and fun. There is no prerequisite, except an interest in interesting mathematics. Topics typically include selections from number theory, math education, statistics, problem solving, undergraduate research, calculus, differential equations, spatial and planar geometry, probability, computer applications, mathematical operations, modeling, topology, trigonometry, metric measurements, elliptical curves, and bubbles, among others. This exposure broadens your horizons and expands your curiosity in hopes that you will explore mathematics beyond your required courses. 2 hours lecture. (021647)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 8 units
Course Attributes: Upper Division

MATH 305  Conceptual and Practical Statistics  3 Units
Prerequisite: MATH 120 or MATH 109 (may be taken concurrently).
Typically Offered: Spring only
Design of statistical experiments, graphing, sampling techniques, probability, and common probability distributions will be discussed, with an emphasis on practical applications. Uses and misuses of statistics, misrepresentation of data, and proper and improper statistical analyses will be discussed. 3 hours discussion. (005532)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 310  Patterns and Structures in Mathematics  3 Units
Prerequisite: MATH 110; MATH 210 or MATH 225.
Typically Offered: Fall and spring
Builds upon student’s understanding of numbers and operations to develop their algebraic and proportional reasoning. Probability viewed as an application of proportional reasoning. Foundational statistics is also covered. Overall focus on developing a deep understanding of mathematics that is relevant to the teaching of Kindergarten-8th grade. Not acceptable for a mathematics major or minor except the Foundational Math Education option and Math Education minor. 3 hours discussion. (005542)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 311  Intuitive Foundations of Geometry  3 Units
Prerequisite: MATH 110, MATH 210; or MATH 225.
Typically Offered: Spring only odd years
An intuitive approach to problem-solving in Euclidean, coordinate, motion, and space geometry. Concrete models are used for analyzing abstract ideas. Not acceptable for a mathematics major or minor other than the Math Education minor. 3 hours discussion. (005543)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 314  Applied Statistical Methods I  4 Units
Prerequisite: MATH 121; and one of the following: CSCI 111, MATH 130 (may be taken concurrently), MATH 230 or MECH 208.
Typically Offered: Fall and spring
Basic concepts of probability and statistics with emphasis on models used in science and technology. Probability models for statistical estimation and hypothesis testing. Confidence limits. One- and two-sample inference, simple regression, one- and two-way analysis of variance. Credit cannot be received for both MATH 314 and MATH 315. 4 hours discussion. (005533)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Upper Division; Laptop required

MATH 315  Applied Statistical Methods II  3 Units
Prerequisite: MATH 105, MATH 109, or MATH 120, or faculty permission.
Typically Offered: Fall and spring
Single and two sample inference, analysis of variance, multiple regression, analysis of co-variance, experimental design, repeated measures, nonparametric procedures, and categorical data analysis. Examples are drawn from biology and related disciplines. The statistical programming language R is used. Appropriate for biology, agriculture, nutrition, psychology, social science and other majors. 3 hours discussion. (005568)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 317  Cryptography  4 Units
Prerequisite: CSCI 111; MATH 217 or MATH 330W.
Typically Offered: Spring only
This is the first course in cryptography with an emphasis on public key cryptosystems, digital signature schemes, and the underlying mathematical principles on which they are based. Students implement algorithms and solve problems in programming-based assignments. Some time is devoted to getting familiar with the Python programming language and the SageMath Software system. 4 hours discussion. (022044)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Upper Division
MATH 330W Methods of Proof (W) 3 Units W
Prerequisite: GE Written Communication (A2) requirement and MATH 121.
Typically Offered: Fall and spring
A survey of elementary principles of logic, emphasizing the nature of proof. Standard methods of proof will be illustrated with examples from various branches of mathematics, including set theory and the theory of functions and relations. Other possible sources of examples include the calculus, number theory, theory of equations, topology of the real line. 3 hours seminar. (005530)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Writing Course

MATH 333 History of Mathematics 3 Units
Prerequisite: MATH 121; MATH 220 or MATH 225; and at least one upper division mathematics course. Recommended: MATH 330W.
Typically Offered: Fall only
Study of the historical development of mathematics, with particular emphasis on the relationship between mathematics and society. 3 hours discussion. (005531)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 337 Introduction to the Theory of Numbers 3 Units
Prerequisite: MATH 121, MATH 330W.
Typically Offered: Fall only
Basic properties of the integers, division algorithm, fundamental theorem of arithmetic, number-theoretic functions, Diophantine equations, congruences, quadratic residues, continued fractions. 3 hours discussion. (005585)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 341 Mathematical Topics for the Credential 3 Units
Prerequisite: MATH 121 or MATH 225.
Typically Offered: Fall only
This course is designed to supplement the mathematical background of the candidate for the single subject credential in mathematics. The mathematical topics will be discussed from the student's and the teacher's points of view to aid the candidate in making the transition to secondary school mathematics. Topics include mathematical problem-solving, conceptual ideas using algebra, geometry, and functions, incorporating technology into the mathematics curriculum, and finite systems. 3 hours seminar. (005544)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 342 Math Topics for the Credential 3 Units
Prerequisite: MATH 341.
Typically Offered: Spring only
This course focuses on having students examine mathematical pedagogy and the understanding and evaluations of students as mathematical learners as it analyzes secondary mathematics curriculum from an advanced standpoint. Students will have opportunities to be involved in the facilitation of mathematical learning. Topics include: history of mathematics education, contemporary mathematics curricula, problem solving, mathematical reasoning and methods of proof, mathematical learning theories, communication, assessment and collaborative learning communities. 3 hours discussion. (005545)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 344 Graph Theory 3 Units
Prerequisite: MATH 121; CSCI 217, MATH 217, or MATH 330W.
Typically Offered: Spring only odd years
An introduction to graph theory and network theory. Directed graphs, trees, connectivity, duality, coloring, and planarity are studied both from a theoretical perspective as well as with respect to efficient algorithms. 3 hours discussion. (005591)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 346 College Geometry 3 Units
Prerequisite: MATH 220 or MATH 225; MATH 330W.
Typically Offered: Spring only
An exploration of axioms and models for Euclidean and non-Euclidean geometries focusing on the independence of the Parallel Postulate. Additional topics will be chosen from Euclidean plane geometry, transformation geometry, and the geometry of polyhedra. 3 hours discussion. (005561)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 350 Introduction to Probability and Statistics 3 Units
Prerequisite: MATH 121.
Typically Offered: Fall and spring
Basic concepts of probability theory, random variables and their distributions, limit theorems, sampling theory, topics in statistical inference, regression, and correlation. 3 hours discussion. (005534)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

MATH 351 Introduction to Probability and Statistics 3 Units
Prerequisite: MATH 350.
Typically Offered: Spring only
Continuation of MATH 350. 3 hours discussion. (005535)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisite</th>
<th>Typically Offered</th>
<th>Grade Basis</th>
<th>Repeatability</th>
<th>Course Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 360</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
<td>MATH 260.</td>
<td>Spring only</td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 361</td>
<td>Boundary Value Problems and Partial Differential Equations</td>
<td>3</td>
<td>MATH 260.</td>
<td>Fall only</td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 385</td>
<td>Introduction to Data Science</td>
<td>3</td>
<td>CSCI 111, MATH 130, or MATH 230, MATH 109 or MATH 120.</td>
<td>Fall only</td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 398</td>
<td>Special Topics in Math</td>
<td>1-3</td>
<td>At least one 100- or 200-level mathematics course appropriate to the subject, faculty permission.</td>
<td>Fall and spring</td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 399</td>
<td>Special Problems</td>
<td>1-3</td>
<td>Fall and spring</td>
<td></td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 401</td>
<td>CMP Institute - Summer 1</td>
<td>2</td>
<td></td>
<td></td>
<td>Credit/No Credit</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 407</td>
<td>CMP Institute - Summer 2</td>
<td>1</td>
<td></td>
<td></td>
<td>Credit/No Credit</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 420W</td>
<td>Advanced Calculus (W)</td>
<td>3</td>
<td>MATH 220, MATH 330W, upper-division standing.</td>
<td>Fall and spring</td>
<td>Graded</td>
<td></td>
<td>Upper Division; Writing Course; Graduation Writing Assessment</td>
</tr>
<tr>
<td>MATH 421</td>
<td>Advanced Calculus</td>
<td>3</td>
<td>MATH 420W.</td>
<td></td>
<td>Graded</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>MATH 425W</td>
<td>Computational and Communication in Mathematical Modeling (W)</td>
<td>3</td>
<td>GE Written Communication (A2) requirement, MATH 225, MATH 235, MATH 330W, upper-division standing.</td>
<td>Fall only</td>
<td>Graded</td>
<td></td>
<td>Upper Division; Writing Course; Graduation Writing Assessment</td>
</tr>
</tbody>
</table>

Assessment
- Upper Division; Writing Course; Graduation Writing Assessment
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
<th>Prerequisite</th>
<th>Typically Offered</th>
<th>Grade Basis</th>
<th>Repeatability</th>
<th>Course Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 428</td>
<td>Differential Geometry</td>
<td>3</td>
<td>MATH 220, MATH 330W.</td>
<td>Fall only odd years</td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The geometry of curves and surfaces in Euclidean 3-space. 3 hours lecture.</td>
<td>(005566)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grade Basis: Graded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 435</td>
<td>Linear Algebra</td>
<td>3</td>
<td>MATH 220, MATH 235, MATH 330W.</td>
<td>Spring only even years</td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vector spaces, linear operators, bilinear forms and scalar products,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>unitary spaces; matrix polynomials, eigenvalues, and Jordan normal form.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grade Basis: Graded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 437</td>
<td>Topology</td>
<td>3</td>
<td>MATH 220, MATH 330W.</td>
<td>Fall only</td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metric spaces, continuous functions, homeomorphisms, separation, and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>covering axioms, connectedness. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 441</td>
<td>Math Topics for the Credential</td>
<td>4</td>
<td>MATH 342.</td>
<td></td>
<td>Credit/No Credit</td>
<td>You may take this course for a maximum of 8 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Corequisites: Assignment as a Mathematics Department intern.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typically Offered: Fall and spring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Supervised internship in teaching mathematics with accompanying seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Guidance in facilitation of mathematical learning. Topics include</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>contemporary mathematics curriculum topics, mathematical learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>theories, communication, and assessment. 3 hours seminar, 3 hours supervision.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005546)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 442</td>
<td>Mathematics and the Teaching of Mathematics</td>
<td>3</td>
<td>MATH 342.</td>
<td></td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typically Offered: Fall only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Completes a three course series, started with two semesters of Mathematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>for the Credential, MATH 341 and MATH 342. Students compare</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>instructional strategies and explore the role content and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>pedagogical content knowledge has in these strategies. Central</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>to the class is a lesson study project which entails a cycle of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>lesson development, implementation, reflection and revision, and implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>again. Students concurrently enrolled in EDTE 535A,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Teaching Practicum I for Blended Math Candidates, are able to implement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>their lesson as part of the practicum, and have a real context for the full</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>content of the course. 3 hours lecture.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grade Basis: Graded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Repeatability: You may take this course for a maximum of 3 units</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 449</td>
<td>Modern Algebra</td>
<td>3</td>
<td>MATH 220, MATH 235, MATH 330W.</td>
<td>Fall only</td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Introduction to basic algebraic structures such as groups, ring, and fields.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The fundamental concepts of homomorphism, subgroup, normal subgroup and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>factor group of a group as well as subring, ideal and factor ring of a ring;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>permutation groups and matrix groups. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 450</td>
<td>Mathematical Statistics</td>
<td>3</td>
<td>MATH 220, MATH 330W, MATH 351.</td>
<td>Fall and spring</td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A rigorous theoretical treatment of the following topics: transformations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of random variables, estimation, Neyman-Pearson hypothesis testing, likelihood</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ratio tests, and Bayesian statistics. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 451</td>
<td>Modern Algebra II</td>
<td>3</td>
<td>MATH 449.</td>
<td></td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Continuation of MATH 449, topics may include group actions, the Sylow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>theorems, number fields, finite fields, algebraic extensions, field</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>automorphisms, splitting fields of polynomials, Galois groups, and solvable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>groups. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 456</td>
<td>Applied Statistical Methods II</td>
<td>3</td>
<td>MATH 314 or MATH 315.</td>
<td></td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advanced topics in applied statistics including multiple and logistic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>regression, multivariate methods, multi-level modeling, repeated measures,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and others as appropriate. The statistical programming language R is used.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Appropriate for biology, agriculture, nutrition, business, psychology,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>social science and other majors. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 458</td>
<td>Sampling Methods</td>
<td>3</td>
<td>MATH 314, MATH 315, or MATH 351 (may be taken concurrently).</td>
<td></td>
<td>Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The theory and application of survey sampling techniques. Topics include</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>simple random sampling, stratified sampling, systematic sampling, and cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>sampling. Appropriate for mathematics, computer science, psychology, social</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>science, agriculture, biology, and other majors. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grade Basis: Graded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MATH 461 Numerical Analysis  3 Units  
**Prerequisite:** MATH 220 or MATH 260; completion of computer literacy requirement.  
**Typically Offered:** Spring only  
Approximation; numerical integration; numerical solution of ordinary and partial differential equations; interpolation and extrapolation. 3 hours discussion.  (005584)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division  

MATH 465 Introduction to Complex Variables  3 Units  
**Prerequisite:** MATH 220.  
**Typically Offered:** Fall only  
Algebra of Complex Numbers, Cauchy-Riemann Equations, the exponential, trigonometric, and logarithmic functions, complex integration and Cauchy integral formula, Taylor and Laurent series, the residue theorem, conformal mapping, and applications. 3 hours discussion.  (005577)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division  

MATH 467 Introduction to Chaotic Dynamical Systems  3 Units  
**Prerequisite:** MATH 260. Recommended: MATH 235, MATH 360.  
**Typically Offered:** Fall only odd years  
An introduction to the study of non-linear dynamical systems. Both discrete and continuous systems will be studied using classical analysis combined with geometric techniques and computer simulation. Areas of application include fractal geometry, coding theory, fluid turbulence, population fluctuation, and chaotic vibrations of structures and circuits. 3 hours discussion.  (005588)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division  

MATH 475 Calculus of Variations  3 Units  
**Prerequisite:** MATH 260, MATH 361 is recommended.  
**Typically Offered:** Fall only even years  
Classical problems in the calculus of variations. Euler-Lagrange equations. Isoperimetric problems, Fermat’s principle. Lagrangian and Hamiltonian mechanics of particles. Two independent variables. Applications to physics and engineering. 3 hours discussion.  (005590)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division  

MATH 485 Advanced Topics in Data Science  3 Units  
**Prerequisite:** CSCI 385 or MATH 385, MATH 456 (may be taken concurrently).  
**Typically Offered:** Spring only  
Getting connected to current events in Data Science and building an online presence. Ethics of predictive analytics and privacy and open data. Reporting and dissemination of research using interactive dashboards and web-publishing. Introduction to current scalable technologies to handle Big Data. Introduction to advanced statistical analysis and machine learning techniques for Data Science. 3 hours lecture.  (021890)  
**Cross listing(s):** CSCI 485  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division  

MATH 490 Data Science Capstone  1-3 Units  
**Prerequisite:** MATH 485, senior standing, approved project, enrollment in the Data Science Certificate Program.  
**Typically Offered:** Fall and spring  
Students work independently to provide a service in the form of a data product to a local business, researcher, or community member. Students provide status reports at weekly meetings and present their finished project to a group of peers at the end of the semester in an appropriate venue such as at an undergraduate seminar series or poster symposium. 0 hours supervision.  (021898)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division  

MATH 495H Honors Reading Course  3 Units  
**Prerequisite:** Admission to the Department Honors Program, completion of MATH 420W with a grade of B or higher.  
**Typically Offered:** Fall and spring  
Directed reading in an advanced topic under the guidance of an Honors thesis supervisor. The course exceeds the usual level of difficulty associated with undergraduate work. It provides the background necessary to write an Honors thesis. 9 hours supervision.  (005595)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division  

MATH 498 Advanced Topics in Mathematics  1-3 Units  
**Prerequisite:** At least one 300- or 400-level mathematics course appropriate to the subject, faculty permission.  
**Typically Offered:** Fall and spring  
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision.  (005593)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course more than once  
**Course Attributes:** Upper Division  

MATH 499 Special Problems  1-3 Units  
**Prerequisite:** Faculty permission.  
**Typically Offered:** Fall and spring  
This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 3 hours supervision.  (005594)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisite</th>
<th>Typically Offered</th>
<th>Grade Basis</th>
<th>Repeatability</th>
<th>Course Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 499H</td>
<td>Honors Thesis</td>
<td>3</td>
<td>Completion of MATH 495H with a grade of B or higher, and approval by the</td>
<td>Fall and spring</td>
<td>Graded</td>
<td>You may take</td>
<td>Upper Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>department Honors advisor and thesis supervisor of the proposed thesis topic.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td>MATH 610</td>
<td>Topics in Mathematics for Secondary Teachers: Analysis</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore analysis topics appropriate for the secondary school curriculum.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>These topics and strategies provide a basis for reflective analysis and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>deepening knowledge of analysis.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005596)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 615</td>
<td>Statistical Methods for Graduate Research</td>
<td>3</td>
<td>MATH 105, MATH 305, MATH 315, or MATH 350 (only one is required).</td>
<td>Fall only</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Fall only</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Introduction to common procedures used to analyze data. Single and</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>two-sample inference, analysis of variance, multiple regression, analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of co-variance, experimental design, repeated measures, nonparametric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>procedures, and categorical data analysis. Examples will be drawn from</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>biology and related disciplines. Statistical computer packages will be</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>introduced. Appropriate for biology, agriculture, nutrition, psychology,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>social science, and other majors. 3 hours discussion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005597)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 620</td>
<td>Topics in Mathematics for Secondary Teachers: Geometry</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore geometry appropriate for the secondary school curriculum. These</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>topics and strategies provide a basis for reflective analysis and deepening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>knowledge of geometry. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005602)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 630</td>
<td>Topics in Mathematics for Secondary Teachers: Foundations</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore the foundations of mathematics topics appropriate for the</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>secondary school curriculum. These topics and strategies provide a basis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>for reflective analysis and deepening knowledge of the foundations of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>mathematics. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005601)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 633</td>
<td>Topics in Mathematics for Secondary Teachers: Number Theory</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore number theory appropriate for the secondary school curriculum.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>These topics and strategies provide a basis for reflective analysis and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>deepening knowledge of number theory. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005605)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 635</td>
<td>Topics in Mathematics for Secondary Teachers: Discrete Mathematics</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore discrete mathematics topics appropriate for the secondary school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>curriculum. These topics and strategies provide a basis for reflective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>analysis and deepening knowledge of discrete mathematics. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005600)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 637</td>
<td>Topics in Mathematics for Secondary Teachers: History of</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take</td>
<td>Graduate Division</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td></td>
<td>permission.</td>
<td></td>
<td></td>
<td>this course</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typical Offered: Inquire at department.</td>
<td></td>
<td></td>
<td>for a maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers</td>
<td></td>
<td></td>
<td>of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>explore the history of mathematics appropriate for the secondary school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>curriculum. These topics and strategies provide a basis for reflective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>analysis and deepening knowledge of the history of mathematics. 3 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(005603)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Units</td>
<td>Prerequisite</td>
<td>Typically Offered</td>
<td>Grade Basis</td>
<td>Repeatability</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>MATH 640</td>
<td>Topics in Mathematics for Secondary Teachers: Modern Algebra</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor permission.</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers explore modern algebra topics appropriate for the secondary school curriculum. These topics and strategies provide a basis for reflective analysis and deepening knowledge of modern algebra. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 650</td>
<td>Topics in Mathematics for Secondary Teachers: Probability and Statistics</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor permission.</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers explore probability and statistics appropriate for the secondary school curriculum. These topics and strategies provide a basis for reflective analysis and deepening knowledge of probability and statistics. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 660</td>
<td>Topics in Mathematics for Secondary Teachers: Mathematical Modeling</td>
<td>3</td>
<td>Admission to the master's program in mathematics education or instructor permission.</td>
<td>Inquire at department</td>
<td>Report in Progress: ABC/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Through an array of pedagogical strategies, secondary mathematics teachers explore mathematical modeling appropriate for the secondary school curriculum. These topics and strategies provide a basis for the reflective analysis and deepening knowledge of mathematical modeling. 3 hours seminar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 697</td>
<td>Independent Study</td>
<td>1-3</td>
<td>This course is a graduate-level independent study offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 3 hours supervision.</td>
<td>Fall and spring</td>
<td>Report in Progress: Graded</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699P</td>
<td>Master's Project</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
<tr>
<td>MATH 699T</td>
<td>Master's Study</td>
<td>1-3</td>
<td>This course is offered for 1.0-6.0 units. You must register directly with a supervising faculty member.</td>
<td>Fall and spring</td>
<td>Report in Progress: CR/NC</td>
<td>You may take this course for a maximum of 6 units</td>
<td></td>
</tr>
</tbody>
</table>