MATHEMATICS (MATH)

Courses

MATH 509. Number Theory. 3 Credit Hours.
This course will cover topics such as divisibility, prime numbers, Fundamental Theorem of Arithmetic, Euclid's Algorithm, Pascal's Triangle, Fibonacci numbers, congruences and residue classes, Diophantine equations, Euler's Phi Function, Fermat's Last Theorem, and Pythagorean Triples. A major application in the course will be to Cryptography. This is a 500 level graduate course. Permission of instructor may be required.
Session Cycle: Spring
Yearly Cycle: Annual.

MATH 535. Geometry. 3 Credit Hours.
Since the time of Euclid (330 BC) the study of Geometry has been regarded as a foundation of western education and the preferred context in which to teach young adults the purpose and value of logical thinking. This course offered to provide undergraduate level mathematics education students and others and introduction to and a mastery of both the classical and analytic aspects of Euclidean Geometry. The ideas of point, line, plane, triangle, quadrilaterals, parallelism and lack of it, similarity, congruence, area, volume and Loci will be formally presented through an axiomatic method using definitions, postulates and geometric proofs. The structure, the pedagogy and the presentation of the above topics will also be emphasized throughout the course. This is a 500 level graduate course. Permission of instructor is required.
Session Cycle: Spring
Yearly Cycle: Annual.

MATH 555. SAS Programming and Applied Statistics. 3 Credit Hours.
This course provides an introduction to SAS programming and covers the material required for the SAS Base Programming Exam. The first part of this course focuses on the following key areas: reading raw data files and SAS data sets; investigating and summarizing data by generating frequency tables and descriptive statistics; creating SAS variables and recoding data values; subsetting data; combining multiple SAS files; creating listing, summary, HTML, and graph reports. The second part of this course focuses on how to manage SAS data set input and output, work with different data types, and manipulate data. Specifically, this part of the course discusses using the DATA step to control SAS data set input and output, combine SAS data sets, summarize data, process data iteratively with DO loops and arrays, and perform data manipulations and transformations. A comprehensive real-world data project is required along with a presentation to the class and other interested parties of key aspects of the project with an analysis of the results. This is a 500 level graduate course. Permission of instructor may be required.
Session Cycle: Spring
Yearly Cycle: Annual.

MATH 560. Applied Data Mining. 3 Credit Hours.
This course introduces students to the current theories, practices, statistical tools and techniques in "data mining," which embodies cutting-edge methods to reveal competitive insight, market advantage and strategic opportunities by employing SAS Enterprise Miner software with real-world case studies. This course will cover the most useful statistical tools in data mining such as cluster analysis, logistic regression, classification trees, and neural networks. In addition, a comprehensive real-world data project will be required along with a presentation to the class and other interested parties of key aspects of the project with an analysis of the results. This is a 500 level graduate course and permission of the instructor is required.
Prerequisites: 2 semesters of statistics equivalent to MATH 201 and MATH 350.

MATH 561. Applied Multivariate Statistics. 3 Credit Hours.
After a review of ANOVA, the course covers analysis of covariance, discriminant analysis, principal components and factor analysis, multivariate analysis of variance (MANOVA), logistic regression, and cluster analysis. SAS is used throughout the course. A major project that entails analyzing "real" multivariate datasets along with a formal report and presentation of the results will be required. This is a 500 level graduate course. Instructor permission may be required.
Session Cycle: Spring
Yearly Cycle: Annual.

MATH 570. Design and Analysis of Experiments. 3 Credit Hours.
The objective of this course is to familiarize students with fundamental concepts in the design and statistical analysis of experiments using Analysis of Variance. Several analysis of variance models will be introduced including Between-Subject (Random-Measures) designs, Within-Subject (Repeated Measures) designs, Factorial designs, and Mixed designs. Students will learn how to choose an appropriate design. Additional topics will be addressed including multiple comparison procedures, power considerations, sample size, and checking assumptions. SAS will be utilized for the statistical analysis and the course will be approved for one of the four courses necessary for SAS certification. A thorough understanding of the methods, concepts, and interpretation of results will be emphasized. Students will design and analyze an experiment as part of the course. This is 500 level graduate course and permision of the instructor is required.
Prerequisites: Two semesters of statistics equivalent to our MATH 201 and MATH 350.

MATH 575. Applied Analytics Using SAS. 3 Credit Hours.
This course will include an in depth preview of applied analytical approaches, challenges, and solutions. A hands-on approach will be emphasized throughout the semester. A brief review of analytical techniques through material covered in MATH 350 or AM 332 will be included, as well as an introduction to further analytical tools such as multivariate analysis, predictive modeling, time series analysis and survey analysis. SAS Enterprise Guide Software will be introduced and utilized for applying hands-on analysis to real world data problems. The course is project focused and 100% of the students' grade will be based on three projects. This is a 500 level graduate course. Instructor permission may be required.
Session Cycle: Spring
Yearly Cycle: Annual.