

# MATHEMATICS (MAT)

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## MAT 500 Survey of Mathematics (3 credits)

This course is the first course in an intensive mathematics immersion program for career changers seeking to be teachers of mathematics. It provides an overview of mathematics across a variety of areas based on the backgrounds and needs of the students. Topics will be drawn from among mathematical reasoning and communication, number theory and concepts, algebra, analytic geometry, calculus, geometry, trigonometry, data analysis, probability, statistics and discrete mathematics.

## MAT 605 History of Science and Mathematics (3 credits)

## MAT 607 Experiences in Geometry (4 credits)

## MAT 609 Statistics (3 credits)

## MAT 610 Statistical Analysis (3 credits)

## MAT 612 Geometrical Perspectives (3 credits)

## MAT 613 Probability (4 credits)

A study of the concepts in probability theory along with derivation and application of appropriate computational methods. Topics include: combinatorics, basic axioms, independence, discrete and continuous univariate and multivariate distributions, expectation, limit theorems and simulation (if time permits).

## MAT 617 Interest Theory and Applications (4 credits)

A study of the concepts in theory of interest along with derivation and application of requisite mathematics for practical implementation of such concepts. Topics include: measurement of and problems in interest, annuities, yield rates, amortization and sinking funds, securities, some advanced financial analysis (if time permits), and stochastic approaches to interest.

## MAT 621 Risk Analysis in Insurance and Finance (4 credits)

This course develops the mathematical foundation of risk characterization, risk assessment, risk communication, and risk management. A new approach integrating the technical, psychological, and sociological aspects of risk assessment is used.

## MAT 625 Financial Mathematics (4 credits)

This course develops the mathematical foundation of financial modeling. It covers model selection and analysis for valuation of various financial instruments and contingent claims.

## MAT 650 Special Topics in Mathematics (3 credits)

### MAT 650A Topic: Graph Theory in School Teaching (3 credits)

### MAT 650B Topic: Discrete Mathematics (2 credits)

### MAT 650C Topic: Linear Algebra (4 credits)

### MAT 650D Algebraic Structures (3 credits)

### MAT 650E Topics: Probability (1-4 credits)

### MAT 650M Topic: Secondary School Mathematics from an Advanced Point of View (3 credits)

### MAT 650N Topic: Geometry, Algebra, Analysis (3 credits)