

MAP: Mathematics: Applied Courses

Courses

MAP 2302 Differential Equations
3 sh (may not be repeated for credit)
Prerequisite: MAC 2313

Introduction to ordinary differential equations; emphasis on linear equations, operator methods, systems of equations. Applications. Meets Gordon Rule Theoretical Mathematics Requirement.

MAP 3905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

MAP 4115 Introduction to Stochastic Processes
3 sh (may not be repeated for credit)
Prerequisite: MAC 2312

General stochastic processes with emphasis on Markov Chains, stationary distribution of Markov Chains, Renewal Theory, Branching processes, Queuing systems, applications to quality control. Offered concurrently with MAP 5116; graduate students will be assigned additional work. Meets Gordon Rule Applied Mathematics Requirement.

MAP 4341 Partial Differential Equations
3 sh (may not be repeated for credit)
Prerequisite: MAP 2302

First-order equations, derivation and classification of second-order equations. Solution techniques of boundary value and initial value problems; applications. Offered concurrently with MAP 5345; graduate students will be assigned additional work. Meets Gordon Rule Theoretical Mathematics Requirement.

MAP 5116 Introduction to Stochastic Processes
3 sh (may not be repeated for credit)

General stochastic processes with emphasis on Markov Chains, stationary distribution of Markov Chains, Renewal theory, Branching processes, Queuing systems, applications to quality control. Offered concurrently with MAP 4115; graduate students will be assigned additional work.

MAP 5345 Partial Differential Equations
3 sh (may not be repeated for credit)

First-order equations, derivation and classification of second-order equations. Solution techniques of boundary value and initial value problems; applications. (Gordon Rule Course: Theoretical Math) Offered concurrently with MAP 4341; graduate students will be assigned additional work.

MAP 5471 Advanced Probability and Inferences
3 sh (may not be repeated for credit)

Advanced topics in probability, limit theorems, limiting distributions, order statistics, weak law of large numbers, strong law of large numbers, central limit theorem. Advanced topics in point and interval estimation, measures of quality of estimates, Exponential families, Completeness, Unbiasedness, Cramer-Rao inequality, Rao-Blackwell theorem, minimum variance unbiased estimators, maximum likelihood estimators principles, Bayes' and minimax estimation, Robust estimation; Advanced hypothesis testing.

MAP 5905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

MAP 6106 Mathematical Methods of Operations Research I
3 sh (may not be repeated for credit)

Mathematical linear programming models, theory of simplex method, revised simplex methods, dual simplex methods; duality theory and sensitivity analysis, transportation problems, theory of integer programming. Credit may not be received for both MAP 6106 and STA 6607.

MAP 6107 Mathematical Methods of Operations Research II
3 sh (may not be repeated for credit)

Interior-point algorithm, linear goal programming, game theory, nonlinear programming, network analysis, PERT / CPM, queuing theory. Credit may not be received in both MAP 6107 and STA 6608.

MAP 6108 Mathematical Modeling and Initial and Boundary Value Problems
3 sh (may not be repeated for credit)

Methodology and framework for mathematical modeling. Current topics in applied mathematics will be presented emphasizing the interdependency of mathematics and its applications to physical, societal and other "real world" phenomena.

MAP 6377 Numerical Analysis of Partial Differential Equations
3 sh (may not be repeated for credit)
Prerequisite: MAD 6405

This course provides a basic foundation in numerical methods for solving partial differential equations.

MAP 6905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

MAP 6930 Topics in Applied Mathematics
3 sh (may not be repeated for credit)

This course is devoted to applications chosen from among Numerical Analysis, Numerical Linear Algebra, Ordinary and Partial Differential Equations, Optimization, Mathematical Modeling, and Mathematical Visualization.