AMS 101-C Applied Precalculus

AMS 151-C Applied Calculus I

AMS 210 Applied Linear Algebra

AMS 261 Applied Calculus III

AMS 300 Writing in Applied Mathematics

AMS 303 Graph Theory

AMS 309 Finite Mathematical Structures

AMS 315 Data Analysis

AMS 318 Theory of Interest

AMS 322 Groundwater Modeling

AMS 326 Numerical Analysis

AMS 331 Mathematical Modeling

AMS 335 Game Theory

www.stonybrook.edu/ugbulletin
AMS 341 Operations Research I: Deterministic Models
Linear programming with a view toward its uses in economics and systems analysis. Linear algebra and geometric foundations of linear programming: simplex method and its variations; primal dual programs; formulation and interpretation of linear programming models, including practical problems in transportation and production control. Optional computer project. AMS 341 and 342 may be taken in either order, though it is recommended that AMS 341 be taken first. Prerequisites: AMS 210 or MAT 211
3 credits

AMS 342 Operations Research II: Stochastic Models
Methods and techniques for stochastic modeling and optimization, with applications to queuing theory, Markov chains, and games, and decisions. AMS 341 and 342 may be taken in either order, though it is recommended that AMS 341 be taken first. Prerequisites: AMS 210 or MAT 211; AMS 311
3 credits

AMS 345 Computational Geometry
The design and analysis of efficient algorithms to solve geometric problems that arise in computer graphics, robotics, geochanical information systems, manufacturing, and optimization. Topics include convex hulls, triangulation, Voronoi diagrams, visibility, intersection, robot motion planning, and arrangements. This course is offered as both AMS 345 and CSE 355. Prerequisites: AMS 301; programming knowledge of C or C++ or Java
3 credits

AMS 351 Applied Algebra
Topics in algebra: groups, informal set theory, relations, homomorphisms. Applications: error correcting codes, Burnside’s theorem, computational complexity, Chinese remainder theorem. This course is offered as both AMS 351 and MAT 312. Prerequisites: AMS 210 or MAT 211
Advisory Prerequisites: MAT 200 or CSE 113
3 credits

AMS 361 Applied Calculus IV: Differential Equations
Homogeneous and inhomogeneous linear differential equations; systems of linear differential equations; solution with power series and Laplace transforms; partial differential equations and Fourier series. May not be taken for credit in addition to the equivalent MAT 303. Prerequisite: AMS 161 or MAT 127 or 132 or 142
4 credits

AMS 394 Statistical Laboratory
Designed for students interested in statistics and their applications. Basic statistical techniques including sampling, design, regression, and analysis of variance are introduced. Includes the use of statistical packages such as SPS and SAS. Students translate realistic research problems into a statistical context and perform the analysis. Prerequisite: One AMS course (AMS 102 or 110 or 310 or 315 recommended)
3 credits

AMS 410 Actuarial Mathematics
Integrates calculus and probability with risk assessment and insurance in a quantitative manner to prepare students for the first actuarial examination. Prerequisites: AMS 261 or MAT 203 or 205; AMS 310; AMS 311 or 315
3 credits

AMS 421 Statistical Quality Control and Design of Experiments
Online techniques that determine and control the quality of mass-manufactured products on a real-time basis by means of statistical analysis. Offline use and applications of the design-of-experiment and Taguchi methods to optimize a product and a process design. The concept of total quality management. Histograms, tests for normality, variables, and attribute control charts, orthogonal arrays, and signal-to-noise arrays. Z-transform for the evaluation of the percentage of nonconforming parts, tests for special causes, Zbar-K charts, and process capability analysis. Acceptance quality level and lobby-lot inspection. This course offered as both AMS 421 and MEC 421. Prerequisite: MEC 317
3 credits

AMS 441 Business Enterprise
Explores the strategy and technology of business enterprises. Integrates the practice of engineering and quantitative methods with the operations of a business in today’s globalized environment, whether in product development, financial management, or e-commerce. Prerequisites: U3 or U4 standing
3 credits

AMS 475 Undergraduate Teaching Practicum
Students assist the faculty in teaching by conducting recitation or laboratory sections that supplement a lecture course. The student receives regularly scheduled supervision from the faculty advisor. May be used as an open elective only and repeated once. Prerequisite: U3 or U4 standing
3 credits

AMS 487 Research in Applied Mathematics
An independent research project with faculty supervision. Permission to register requires a B average and the agreement of a faculty member to supervise the research. May be repeated once. Only three credits of research electives (AMS 487, CSE 487, MEC 499, ESE 499, ESM 499, EST 499, ISE 487) may be counted toward engineering technical elective requirements. Prerequisites: Permission of instructor and department
1-3 credits

AMS 492 Topics in Applied Mathematics
Treatment of an area of applied mathematics that expands upon the undergraduate curriculum. Topics may include applied mathematics, statistics, or operations research and change from semester to semester. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated for credit once, as the topic changes. Prerequisite: Permission of instructor
3 credits