Italian, Jewish, Native, and South Asian Americans. 
Prerequisites: U3 or U4 standing; AMR 101 or 102 

AMS 390-G Humanities Topics in American Studies 
Selected topics in American studies in the humanities. Topics may include philosophy and drama in the United States, North and South American films, literary trends in the Americas. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated for credit as the topic changes. 
Prerequisite: U3 or U4 standing 
Advisory Prerequisite: To be announced with the topic 

AMS 392-F Social and Behavioral Sciences Topics in American Studies 
Selected topics in American studies in the social and behavioral sciences. Topics may include political history of the United States and Latin America, North and South American economics. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated for credit as the topic changes. 
Prerequisite: U3 or U4 standing 
Advisory Prerequisite: To be announced with the topic 

AMS 395-J Topics in American Studies 
Topics in non-Western cultures, societies, traditions, literatures, etc. Topics may include contemporary Indian societies in Central and South America, sociology of Latin and South America. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated for credit as the topic changes. 
Prerequisite: U3 or U4 standing 
Advisory Prerequisite: To be announced with the topic 

AMS 397-K Topics in American Studies 
Topics in U.S. literature, culture, history, etc., placed within a broad historical context, including social, political, economic, and cultural history and institutions. Topics may include, for instance, women and men in the contemporary United States and contemporary U.S. culture. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated for credit as the topic changes. 
Prerequisite: U3 or U4 standing 
Advisory Prerequisite: To be announced with the topic 

AMS 401 Senior Seminar in American Studies 
Students synthesize the theories, methods, and knowledge gained in previous coursework through in-depth study of a particular issue or question. Discussion is structured around topics that engage the central themes of the histories, cultures, and societies of the Americas from an interdisciplinary perspective. 
Prerequisites: U4 standing; AMR major or minor 
Advisory Prerequisite: AMR 301 

AMS 447 Directed Readings in American Studies 
Independently supervised readings in selected topics in American Studies. May be repeated. 
Prerequisites: Permission of instructor and department 

AMS 475 Undergraduate Teaching Practicum I 
Work with a faculty member as an assistant in one of the faculty member's regularly scheduled classes. The student is required to attend all the classes, do all the regularly assigned work and meet with the faculty member at regularly scheduled times to discuss the intellectual and pedagogical matters relating to the course. 
Prerequisites: Permission of instructor and department 

AMS 476 Undergraduate Teaching Practicum II 
Work with a faculty member as an assistant in one of the faculty member's regularly scheduled classes. The student is required to attend all the classes, do all the regularly assigned work and meet with the faculty member at regularly scheduled times to discuss the intellectual and pedagogical matters relating to the course. 
Prerequisites: Permission of instructor and department 

AMS 487 Independent Research 
Intensive readings and research on a special topic undertaken with close faculty supervision. May be repeated. 
Prerequisite: Permission of instructor and department 

AMS 488 Internship 
Intensive readings and research on a special topic undertaken with close faculty supervision. May be repeated. 
Prerequisites: Permission of instructor and department 

AMS 495 Senior Honors Project in American Studies 
A one-semester project for seniors. Arranged in consultation with the department, the project involves writing a paper under the close supervision of an appropriate instructor, on a suitable topic. Students who are candidates for honors take this course. 
Prerequisite: Permission of department 

AMS 110 Probability and Statistics in the Life Sciences 
A survey of probability theory and statistical techniques with applications to biological and biomedical situations. Topics covered include Markov chain models; binomial, Poisson, normal, exponential, and chi square random variables; tests of hypotheses; confidence intervals; t tests; and analysis of variance, regression, and contingency tables. May not be taken for credit in addition to AMS 310. 
Prerequisite: AMS 151 or MAT 125 or 131 or 141 

AMS 151-C Applied Calculus I 
A review of functions and their applications; analytic methods of differentiation; interpretations and applications of integration; differential equations models and elementary solution techniques; phase planes; Taylor series and Fourier series. Intended for CEAS majors. Not for credit in addition to MAT 125 or 126 or 131 or 141 or 171. 
Prerequisite: B or higher in MAT 123, or level 5 on the mathematics placement examination, or B or higher in MAT 122 and coregistration in MAT 130 

AMS 161-C Applied Calculus II 
Analytic and numerical methods of integration; interpretations and applications of integration; differential equations models and elementary solution techniques; phase planes; Taylor series and Fourier series. Intended for CEAS majors. Not for credit in addition to MAT 127 or 132 or 142 or 171. 
Prerequisite: C or higher in AMS 151 or MAT 131 or 141, or level 7 on the mathematics placement examination 

AMS 201 Matrix Methods and Models 
Basic properties of matrix algebra, matrix norms, eigenvalues, solving systems of equations; applications to economics, growth models, Markov chains, regression, linear programming. Computer software packages used. May not be taken by students with credit for MAT 211 or AMS 210. 
Prerequisite: AMS 151 or MAT 122, 123, 125, 131 or 141 

AMS 210 Applied Linear Algebra 
An introduction to the theory and use of vectors and matrices. Matrix theory including systems of linear equations; Theory of Euclidean and abstract vector spaces. Eigenvectors and eigenvalues. Linear transformations. May not be taken for credit in addition to MAT 211. 
Prerequisite: AMS 151 or MAT 131 or 141 or corequisite MAT 126 

AMS 261 Applied Calculus III 
Vector algebra and analytic geometry in two and three dimensions; multivariable differential calculus and tangent planes; multivariable integral calculus; optimization and Lagrange multipliers; vector calculus including Green’s and Stokes’s theorems. May not be taken for credit in addition to MAT 203 or 205. 
Prerequisite: AMS 161 or MAT 127 or 132 or 142 or 171 

AMS 300 Writing in Applied Mathematics 
See Requirements for the Major in Applied Mathematics and Statistics, Upper Division Writing Requirement. 
Prerequisites: WRT 102; AMS major; U3 or U4 standing 

AMS 101-C Applied Precalculus 
Prepresents applied topics in functions, discrete dynamical systems, trigonometry and linear algebra designed to improve students’ skills for analyzing problems in the social and natural sciences. Not for credit in addition to any MAT course numbered 125 or higher or to any AMS course numbered 151 or higher. 
Prerequisite: Satisfaction of entry skill in mathematics requirement; level 2 or higher on the mathematics placement examination 

AMS 102-C Elements of Statistics 
The use and misuse of statistics in real life situations; basic statistical measures of central tendency and of dispersion, frequency distributions, elements of probability, binomial and normal distributions, small and large sample hypothesis testing, confidence intervals, chi square test, and regression. May not be taken by students with credit for AMS 110, 310, 311, 312; ECO 320; POL 201; PSY 201; or SOC 202. 
Prerequisite: Satisfaction of entry skill in mathematics requirement (Skill I) or satisfactory completion of D.E.C. C 

AMS 101-C Applied Precalculus 
Prepresents applied topics in functions, discrete dynamical systems, trigonometry and linear algebra designed to improve students’ skills for analyzing problems in the social and natural sciences. Not for credit in addition to any MAT course numbered 125 or higher or to any AMS course numbered 151 or higher. 
Prerequisite: Satisfaction of entry skill in mathematics requirement; level 2 or higher on the mathematics placement examination 

AMS 102-C Elements of Statistics 
The use and misuse of statistics in real life situations; basic statistical measures of central tendency and of dispersion, frequency distributions, elements of probability, binomial and normal distributions, small and large sample hypothesis testing, confidence intervals, chi square test, and regression. May not be taken by students with credit for AMS 110, 310, 311, 312; ECO 320; POL 201; PSY 201; or SOC 202. 
Prerequisite: Satisfaction of entry skill in mathematics requirement (Skill I) or satisfactory completion of D.E.C. C
AMS 301 Finite Mathematical Structures
An introduction to graph theory and combinatorial analysis. The emphasis is on solving applied problems rather than on theorems and proofs. Techniques used in problem solving include generating functions, recurrence relations, and network flows. This course develops the type of mathematical thinking that is fundamental to computer science and operations research. Prerequisite: AMS 210 or MAT 211 or AMS 361 or MAT 203.
3 credits

AMS 303 Graph Theory
Paths and circuits, trees and tree based algorithms, graph coloring, digraphs, network flows, matching theory, matroids, and games with graphs. Prerequisite: AMS 301
3 credits

AMS 310 Survey of Probability and Statistics
A survey of data analysis, probability theory, and statistics. Stem and leaf displays, box plots, schematic plots, fitting straight line relationships, discrete and continuous probability distributions, conditional distributions, binomial distribution, normal and t distributions, confidence intervals, and significance tests. May not be taken for credit in addition to ECO 320. Prerequisite: AMS 201 or 210 or MAT 211
3 credits

AMS 311 Probability Theory
Probability spaces, random variables, moment generating functions, algebra of expectations, conditional and marginal distributions, multivariate distributions, order statistics, law of large numbers. Prerequisites: AMS 301 and 310 or permission of instructor
Corequisites: MAT 203 or 205 or AMS 261
3 credits

AMS 312 Mathematical Statistics
Estimation, confidence intervals, Neyman Pearson lemma, likelihood ratio test, hypothesis testing, chi square test, regression, analysis of variance, nonparametric methods. Prerequisite: AMS 311
3 credits

AMS 315 Data Analysis
Statistical analysis of data. Exploratory data analysis. Estimation. Parametric and nonparametric hypothesis tests. Power. Robust techniques. Use and interpretation of statistical computer packages, such as SPSs. Prerequisite: AMS 302 or 310
3 credits

AMS 318 Theory of Interest
Actuarial mathematics including the arithmetical and algebraic problems posed by calculation of simple and compound interest. Consider investment risks created by variable interest rates, inflation, changing foreign currency exchange rates, and changes in tax laws. Develops problem solving skills adopting both deterministic and stochastic approaches and taking into account the perspectives of the consumer and the investor. Prerequisite: AMS 310
3 credits

AMS 321 Computer Projects in Applied Mathematics
The simulation methodology for a variety of applied mathematical problems in numerical linear and nonlinear algebra, statistical modeling, and numerical differentiation and integration. Graphical representation of numerical solutions. Prerequisites: AMS 210 or 261 or MAT 203; prior programming experience in C, FORTRAN, or Java
3 credits

AMS 322 Groundwater Modeling
Basic numerical models and solution methods for modeling groundwater flow. Finite difference methods for steady state and transient single-phase, solute transport and multi-phase flow in confined and unconfined aquifer systems. Prerequisites: AMS 161 or MAT 127 or 132 or 142; AMS 210 or MAT 211; programming experience in FORTRAN, Pascal, C, or Modula 3
3 credits

AMS 326 Numerical Analysis
Direct and indirect methods for the solution of linear and nonlinear equations. Computation of eigenvalues and eigenvectors of matrices. Quadrature, differentiation, and curve fitting. Numerical solution of ordinary and partial differential equations. Prerequisites: AMS 210 or MAT 211; programming experience in Pascal, FORTRAN, or C
3 credits

AMS 331 Mathematical Modeling
Investigation of the process of translating real world problems into mathematical models. Six to eight unconnected problems are studied in detail. These are chosen to illustrate various methods of formulation and solution, and generally find their origins in the physical and biological sciences. Prerequisites: AMS 210 or MAT 211; AMS 310 or 311
3 credits

AMS 335 Game Theory
Introduction to game theory fundamentals with special emphasis on problems from economics and political science. Topics include strategic games and Nash equilibrium, games in coalition form and the core, bargaining theory, measuring power in voting systems, problems of fair division, and optimal and stable matching. This course is offered as both AMS 335 and ECO 335. Prerequisites: MAT 128 or 131 or 141 or AMS 151; C or higher in ECO 303
3 credits

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 projects. 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, inventory theory, 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, geographical information systems, manufacturing, and optimization. Topics include convex hulls, triangulation, Voronoi diagrams, 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.
Prerequisite: AMS 210 or MAT 211
Advisory Prerequisite: 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 203. Prerequisite: AMS 161 or MAT 127 or 132 or 142 or 171
3 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 SPSs and SAS. Students translate realistic research problems into a statistical context and perform the analysis. Prerequisite: One AMS course (AMS 102 or 110 or 315 recommended) 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. Transform for the evaluation of the percentage of nonconforming parts, tests for special causes, X-bar 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. Prerequisite: 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. Prerequisites: U4 standing as an undergraduate major within the college; a minimum g.p.a. of 3.00 in all Stony Brook courses and the grade of B or better in the course in which the student is to assist; permission of department
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 3 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 0-3 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

ANP 125-E Primate Behavior
An introduction to primate social systems and the factors that influence their maintenance and evolution, including foraging strategy, demographic processes, mating and rearing strategies, conflicts and coalitions, and communication. Prerequisite: ANP 120 3 credits

ANP 321-330 Human Evolution
A comprehensive survey of the fossil record for human evolution from the emergence of the earliest hominins to the emergence of modern humans, with emphasis on morphological and behavioral evolution in the human lineage. Prerequisite: ANP 120 3 credits

ANP 340 Field Methods in Physical Anthropology
Methods, problems, and experience in field techniques. The course focuses on field methods such as fossil excavation, reconstruction of skeletal and dental remains, anthropometry, craniometry, and field behavioral ecology of primates. Prerequisites: ANP 120 or BIO 201; permission of instructor 3-6 credits

ANP 391 Topics in Physical Anthropology
Review of endangered species of primates and case histories of conservation programs in Asia, Africa, South America, and Madagascar, highlighting different problems and solutions. Advisory Prerequisite: ANP 120 or BIO 201 3 credits

ANP 403 Problems in Physical Anthropology
Research and discussion of selected topics in physical anthropology. Seminar supplements to this Bulletin contain specific description when course is offered. May be repeated for credit as the topic changes. Prerequisite: ANP 120 3 credits

ANP 404 Human Osteology
A detailed study of the anatomy of the human skeleton with special emphasis on the interpretation of skeletal remains from archaeological contexts. Consideration is given to the growth, structure, function of bones, and to forensic aspects such as the determination of age, sex, stature, and pathology from skeletal remains. Students conduct a research project on a human skeleton. Prerequisites: ANP 300; permission of instructor 3 credits

ANP 447 Readings in Physical Anthropology
Individual advanced readings on selected topics in physical anthropology. May be repeated up to a limit of 6 credits. Prerequisites: ANP 321 and 330; permission of instructor 3 credits

ANP 475 Undergraduate Teaching Practicum I
Work with a faculty member as an assistant in one of the faculty member’s regularly scheduled classes. The student is required to attend all the classes, do all the regularly assigned work, and meet with the faculty member at regularly scheduled times to discuss the intellectual and pedagogical matters relating to the course. Prerequisites: U3 or U4 standing; anthropology major; 3.00 g.p.a.; permission of instructor; permission of director of undergraduate studies 3 credits, S/U grading

ANP 476 Undergraduate Teaching Practicum II
Work with a faculty member as an assistant in one of the faculty member’s regularly scheduled classes. Students assume greater responsibility in such areas as leading discussions and analyzing results of tests that have already been graded. The course in which the student is permitted to work as a teaching assistant must be different from the course in which he or she previously served. Not for major or minor credit. Prerequisites: U3 or U4 standing; anthropology major; 3.00 g.p.a.; permission of instructor; permission of director of undergraduate studies 3 credits, S/U grading

ANP 487 Independent Research in Physical Anthropology
Independent research projects carried out by upper-division students. The student must propose the research project, carry it out, analyze the data, and submit the results in a written form acceptable to the sponsor. May be repeated up to a limit of six credits. Prerequisites: Two 200- or 300-level ANP courses; permission of instructor and department 0-6 credits

ANP 488 Internship in Physical Anthropology
Participation in state, local, and national public and private agencies and organizations. Students are required to submit written progress reports and a final written report on their experiences to the faculty sponsor and the department. May be repeated to a limit of 12 credits. Prerequisites: 15 credits in anthropology; permission of instructor and department 0-6 credits, S/U grading

ANP 495 Senior Honors Project in Anthropology
First course of a two-semester project for anthropology majors who are candidates for the degree with honors. Arranged in consultation with the department through the director of undergraduate studies, the project involves independent readings or research and the writing of a paper under the close supervision of an appropriate faculty member on a suitable topic selected by the student. Students enrolled in ANP 495 are obliged to complete ANP 496 the following semester. Students receive only one grade upon completion of the sequence ANP 495-496. Prerequisite: Admission to the anthropology honors program 3 credits

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