

LA 4037

Non-Western Societies

Non-Western Societies surveys the non-Western cultures and histories of Asia, Africa, and the Middle East, and their nineteenth and twentieth century interactions with the outside world. This course will explore pre-modern origins and enduring traditions of each region, address various independence movements of the twentieth century, and discuss examples of contact with the West, conflicts arising over US-Soviet Cold War competition, terrorism, and the recent challenges to the emerging global economy. 3 hours Lecture and Discussion — 3 credits

LA 4038

Cultural Enrichment

Students are required to attend or participate in 14 cultural events, including concerts and recitals, lectures presented by distinguished authors, visits to museums, art galleries and shows, and theater presentations from among which the student must select a variety — 1 credit

LA 4110

Critical Issues in World History

Examines global problems in historical perspective across time — war, terrorism, and the threat of war; cultural, racial, ideological, religious, gender, and economic struggles; and the search for peace and order. 3 hours Lecture — 3 credits

LA 4111

International Political Economy

This course analyzes the development, processes, and institutions of the global political economy, with an emphasis upon the politics and diplomacy of international trade and finance. 3 hours Lecture — 3 credits

LA 4112

Senior Seminar

Under faculty direction, students explore topics in any of the following fields: American History, European History, World History, or the History of Science/Agriculture/Technology. This tutorial approach culminates in the preparation of a paper of considerable length with an oral defense/presentation. 3 hours Lecture — 3 credits.

LA 4127

United States Foreign Policy

The history of American foreign relations concerns power, profit, security, politics, and ideology. This offering of US diplomatic history, covering selected

topics from 1775 to the present, will explore competing interpretations of America's hot and cold wars, periods of peace, isolation, and intervention. 3 hours Lecture and Discussion — 3 credits

LA 4203

Social Psychology and Human Interaction

The scientific studies of how people interact, communicate, influence, interpret and relates to one another. The courses focuses on the way an individual relates to groups as well as on how various groups affect the individual. Topics include prejudice, group-think, attitude inoculation, polarization, eyewitness testimony, altruism, aggression, bargaining, mediation, arbitration, and conciliation. 3 hours Lecture and Discussion — 3 credits

LA 4224

Cultural Minorities

The social institutions of selected racial, ethnic and religious minorities, as well as the institutional, demographic and social/psychological aspects of inter-group relations, are reviewed. Prerequisite: Introduction to Sociology. 3 hours Lecture and Discussion — 3 credits

LA 4228

The American Family

This course traces a history and background of American family patterns that includes the structure, functions, and values of the contemporary family. It also deals with the factors that may result in the disorganization of the family. 3 hours Lecture and Discussion — 3 credits

LA 4243

Ethics

An introduction to classical and modern logic; major concerns and approaches to ethics are considered, with emphasis on modern ethical problems. 3 hours Lecture and Discussion — 3 credits

MATHEMATICS AND PHYSICS (MP)

MP 0009

Algebra II (High School)

This course is designed to prepare those students who do not have the requisite high school algebra background for the courses in college algebra which are required for a college degree. 3 hours Lecture and Discussion — 0 credits

Course Descriptions

MP 0010

Basic Mathematics

A review of fundamental arithmetic and algebra to familiarize the students with the basic concepts of mathematics. The course is designed to provide the student with the requisite foundation and practice in preparation for the MP 1102, 1203 or 1205 sequence. Students assigned to this course are required to take MP 1102 College Algebra and MP 1203 Elementary Functions or MP 1205 Finite Mathematics to fulfill the Mathematics Core Curriculum requirement. 3 hours Lecture and Discussion — 3 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)

MP 1102

College Algebra

This course provides a detailed treatment of basic algebra, stressing solution of equations and problem-solving techniques. Emphasis throughout is on practical applications and manipulative skills. Prerequisite: Successful completion of MP 0010 Basic Mathematics or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion — 3 credits

MP 1105

Discrete Mathematics

An introduction to the theory and application of discrete mathematics. Topics include logic, sets, functions and relations, combinations and elementary probability. Prerequisite: College Algebra. 3 hours Lecture and Discussion — 3 credits

MP 1203

Elementary Functions

Mathematical functions, including logarithms and trigonometry, are treated from both the numerical and functional viewpoints. Emphasis throughout is on practical applications and manipulative skills. This course serves as a precalculus background. Prerequisite: College Algebra or its equivalent, as determined by the department, or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion — 3 credits

MP 1204

Calculus I

This is a one-semester calculus course designed to introduce the student to the basic ideas, techniques, and applications of differential and integral calculus

of a single-variable. Prerequisite: Elementary Functions or satisfactory performance on appropriate diagnostic exams administered to entering students. 4 hours Lecture and Discussion — 4 credits

MP 1205

Finite Mathematics

This course provides students with an overview of finite mathematics. Topics include systems of linear equations and inequalities, linear programming, matrix theory, mathematics of finance, set theory, and combinatorics. Prerequisites: College Algebra or its equivalent, as determined by the department or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion — 3 credits.

MP 1206

Geometry

An overview of classical and modern geometry and its applications with an introduction to the axiomatic approach and the concepts of mathematical proof. Prerequisite: Elementary Functions. 3 hours Lecture and Discussion — 3 credits

MP 2114

Business Statistics I

An introduction to the concepts of probability and statistics. Topics include data analysis and description, probability, probability distributions, sampling distributions, and estimation. Prerequisite: Elementary Functions or Finite Mathematics. 3 hours Lecture and Discussion — 3 credits

MP 2115

Introduction to Actuarial Science

This course provides a basic introduction to actuarial science and its role in insurance as a discipline and an industry. Topics include a brief history of the evolution of the actuarial profession, basic mathematics of simple and compound interest, and introduction to probability theory, and applications of material to risk management and insurance. Prerequisite: Elementary Functions or Finite Mathematics or equivalent, as determined by the department. 3 hours Lecture and Discussion — 3 credits

MP 2116

Statistical Quality Control

This course provides an introduction to the purpose and function of statistical quality control. Topics include the use of modern statistical methods for quality control and improvement as well as the prin-

ciples of statistical quality control and their application in a variety of situations. Prerequisite: Elementary Functions or its equivalent, as determined by the department. 3 hours Lecture and Discussion — 3 credits

MP 2119, MP 2219

Physics I and II

This is a general course stressing understanding of physical principles and methods of problem solving. The first semester covers the basic principles of mechanics, heat, and the kinetic theory of gases. The second semester covers electricity, magnetism, wave motion, light, and selected topics in modern physics. In the laboratory, experiments are performed illustrating the basic physical principles and methods of experimental science. Prerequisites: Elementary Functions is a prerequisite for Physics I, and Physics I is a prerequisite for Physics II. 3 hours Lecture and Discussion, 3 hours Laboratory — 4 credits each

MP 2121

Calculus II

This course is a continuation of Calculus I. Topics include methods of integration, infinite series, functions of several variables, partial differentiation and multiple integration. Prerequisite: Calculus I. 4 hours Lecture and Discussion — 4 credits

MP 2123, MP 2224

Physics Ic and IIc

This is a general course which uses calculus to stress the understanding of physical principles and the methods of problem solving. The first semester covers the basic principles of mechanics, heat, and the kinetic theory of gases. The second semester covers electricity, magnetism, wave motion, and light. In the laboratory, experiments are performed illustrating the basic physical principles and methods of experimental science. Prerequisites: Calculus I is a prerequisite for Physics Ic, Physics Ic is a prerequisite for Physics IIc. 3 hours Lecture and Discussion, 3 hours Laboratory — 4 credits each. Students may take the lab that accompanies MP 2119 or MP 2219.

MP 2126

Linear Algebra

This course is an introduction to linear algebra. Topics may include systems of linear equations, matrices, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, and applications. Prerequisite: Calculus I. 3 hours Lecture and Discussion — 3 credits

MP 2214

Business Statistics II

This is a course in statistical inference. Topics include parametric and non-parametric hypothesis tests on means and proportions, Chi squared tests, analysis of variance, regression, and correlation. Practical applications are stressed. Prerequisite: Business Statistics I. 3 hours Lecture and Discussion — 3 credits

MP 2215

Statistics for Business

This course provides an introduction to the concepts of probability and statistics. Topics include data analysis and description, probability distributions, sampling distributions, estimation, and hypothesis testing. Prerequisite: Elementary Functions, Finite Mathematics, or an equivalent course, as determined by the department. 4 hours Lecture and Discussion — 4 credits.

MP 2223

Ordinary Differential Equations

This course covers the solution of ordinary differential equations. The topics of discussion include solution of first-order equations, linear equations with constant coefficients, and series solution of differential equations. Applications are stressed. Prerequisite: Calculus II, Physics II or IIc. 3 hours Lecture and Discussion — 3 credits

MP 2230

Numerical Methods

A study of numerical methods involved in interpolation, differentiations and integration, numerical solutions of equations and systems of equations, and fitting empirical data. Applications are stressed. Prerequisites: Calculus II or both a programming Language and Elementary Functions. 3 hours Lecture and Discussion — 3 credits

MP 3036

Methods in Advanced Mathematics

An introduction to the study of formal mathematics, with an emphasis on proofs. Topics may include finite mathematics and combinatorics, elementary number theory, and analysis. Prerequisite: Calculus II. 2 hours Lecture and Discussion — 2 credits

MP 3037

Modern Algebra and Number Theory

An introduction to the theory of groups, rings, fields and polynomials, and the theory of numbers including unique factorization, congruence classes and the distri-

Course Descriptions

bution of primes. Prerequisites: Linear Algebra and Methods in Advanced Mathematics or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

MP 3120

Foundations of Mathematics

This course presents the logical and philosophical bases of mathematical structures and modes of thinking. This includes discussion of Godel's theorem, the notion of completeness, the Axiom of Choice, and the Peano postulates. Prerequisite: Calculus I or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

MP 3123

Advanced Calculus

This course provides an in-depth look at the calculus of several variables. Topics include the geometry of n -dimensional space, differentiation and integration of functions of several variables, integrals over curves and surfaces, and the theorems of Green, Stokes and Gauss. Prerequisite: Calculus II. 3 hours Lecture and Discussion — 3 credits

MP 3124

Physics IIIc

This course covers the modern concepts of physics and stresses appropriate mathematical techniques. The topics include special theory of relativity, important historical experiments, the classical theory of the electron, the Rutherford atom, the Bohr atom, early ideas on quantization, postulational quantum mechanics from the Schroedinger point of view, and the one electron atom. Prerequisites: Ordinary Differential Equations and either Physics II or IIc. 3 hours Lecture and Discussion — 3 credits

MP 3140

Applied Mathematics

The course covers the mathematical tools for treating a variety of problems in science; boundary value problems for differential equations, Green's functions, calculus of variations, spectral theory of operators, and other topics as time permits are included. Prerequisites: Ordinary Differential Equations and Physics IIc. 3 hours Lecture and Discussion — 3 credits

MP 3231

Statistics for Science

A course in basic and intermediate methods of applied statistics, with emphasis on the analysis of data from laboratory and field experiments. Both parametric and non-parametric techniques are presented, and the logic

underlying experimental design and statistical inference is stressed. Recommended for students anticipating graduate study or research careers. Prerequisite: Elementary Functions or Finite Mathematics. 3 hours Lecture and Discussion — 3 credits

MP 3235

Fourier Series

This is an introduction to Fourier series and eigenvalue functions covering the topics of orthogonal systems, Fourier series, eigenvalue functions and boundary value problems with an introduction to the derivation and classification of partial differential equations. Prerequisite: Ordinary Differential Equations. 3 hours Lecture and Discussion — 3 credits

MP 3241

History of Mathematics

Development of mathematics from the earliest days to the present, with emphasis on Greek mathematics, the development of calculus, and the history of algebra, analysis, and geometry in the nineteenth and twentieth centuries. Prerequisite: Calculus I or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

MP 4115, MP 4215

Mathematics Seminar

A program of individual reading, discussion, and student presentation of material on selected topics in mathematics. Prerequisites: Advanced Calculus and Modern Algebra. 1 hour Lecture and Discussion — 1 credit each

MP 4122

Analysis

This course is an introduction to the ideas and theorems of real analysis. Topics include basic set theory, function theory, topology, sequences and series, and the limits, continuity, differentiation and integration of functions on metric and Euclidean spaces. Prerequisite: Advanced Calculus and Methods in Advanced Mathematics. 3 hours Lecture and Discussion — 3 credits

MP 4125

Partial Differential Equations

Topics include eigenfunctions, expansions, separation of variables, types of partial differential equations, numerical methods, similarity solutions, and perturbation theory. Prerequisite: Advanced Calculus. 3 hours Lecture and Discussion — 3 credits

MP 4132

Symbolic Logic

Topics covered include Boolean algebra, logic circuit analysis, Karnaugh mapping, IC logic families, D/A and A/D conversions, memory devices, flip-flops, arithmetic circuits, number systems and codes, and interfacing. Prerequisites: Elementary Functions or Finite Math and either Physics II or a computer course. 3 hours Lecture and Discussion, 3 hours Laboratory — 4 credits

MP 4227

Complex Variables

This is an introduction to the theory of functions of complex variables. Topics covered are derivatives, Cauchy Riemann equations, harmonic functions, integrals, Cauchy's Integral formula and power series. Additional topics may include conformal mapping and the theory of residues. Prerequisite: Advanced Calculus and either Linear Algebra or Methods in Advanced Mathematics. 3 hours Lecture and Discussion — 3 credits

MP 4228

Special Topics in Mathematics

Topics to be decided at the discretion of Instructor and enrolled students. Prerequisite: Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

ORNAMENTAL HORTICULTURE AND ENVIRONMENTAL DESIGN (OH)

OH 2118

Woody Plant Identification II

The course focuses on the identification, culture and landscape uses of native and introduced trees, shrubs and vines. This spring course features plants that are evergreen and also plants that bloom in the spring. Extensive use is made of the Henry Schmierer Arboretum plant collections on campus. CAN be taken without Woody Plant Identification I. 1 hour Lecture and 3 hours Laboratory — 2 credits

OH 2220

Woody Plant Identification I

The course focuses on the identification, culture and landscape uses of native and introduced trees, shrubs and vines. This fall course features plants that bloom in the summer and fall as well as plants that display autumn foliage and fruits. Extensive use is made of

the Henry Schmierer Arboretum plant collections on campus. 1 hour Lecture and 3 hours Laboratory — 2 credits

OH 3000, 4000

Selected Topics I and II

Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credit accepted toward graduation is limited to 2 credits. 3 hours of student/faculty instruction per week — 1 credit each

OH 3005

Plant Propagation

The course covers, in theory and practice, the principles and methods involved in the propagation of woody and herbaceous plants. Sexual reproduction and asexual reproduction by cuttings, graftage, layering, etc. are considered and practiced. 2 hours Lecture and 3 hours Laboratory — 3 credits

OH 3020

Basic Design

A practical and applied approach to the elements and principles of design, using mixed mediums. The course culminates with a three-dimensional presentation. 2 hours Studio — 1 credit

OH 3101

Flower Show Practicum

In this course, students are involved with every aspect of a major exhibit at the Philadelphia Flower Show, the largest indoor flower show in the world. Field trips and guest lecturers are used extensively to enrich the course. NOTE: This special course runs from September through March, with times arranged. Students must register for both for Fall and Spring semesters. Total practicum credit accepted towards graduation is limited to 2 credits — 1 credit, pass/fail

OH 3106

Floral Crop Production I

Fall and winter major and minor floral crops are studied to indicate specific applications of the fundamental factors and cultural practices required. Prerequisite: Floriculture Techniques or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory — 2 credits