Course Descriptions

HT 4225
Plant Disease Diagnosis
This course provides the student with intensive laboratory experience in the identification of plant pathogens, plant disease diagnosis, and plant disease control as well as a focus on the physiology of the host-parasite interaction, plant disease resistance, and disease appraisal. Prerequisite: Plant Pathology. 2 hours Lecture and 3 hours Laboratory—3 credits

Specialized Methods and Techniques
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty.

HT 3128
Horticulture Techniques I
Scientific investigations and techniques relative to horticultural crop production and management are thoroughly reviewed and tested, using the extensive laboratory, greenhouse and field facilities available. Particular emphasis is placed on techniques used in plant acquisition, selection, and field and orchard layout, and in the management, harvesting, and storage of horticultural crops. Required for Horticulture juniors. 1 hour Lecture and 3 hours Laboratory—2 credits

HT 3229
Horticulture Techniques II
This course introduces advanced horticultural techniques through the study and use of modern equipment and instruments. Qualitative and quantitative determinations as well as statistical analyses are made by the student on a generally independent basis. Development of food products is studied in conjunction with field trips to industry plants. Required for Horticulture juniors. Prerequisite: Introduction to Computers. 1 hour Lecture and 3 hours Laboratory—2 credits

Employment Program

HT 2370
Employment Program
Each student in Horticulture is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.—4 credits

LIBERAL ARTS (LA)

Communications

LA 1112
Spanish I
A study of basic grammar and vocabulary with oral and written exercises that include conversation and composition. 3 hours Lecture and Discussion—3 credits

LA 1113
French I
Students develop a skill for recognizing cognate words using idiomatic expressions and acquire a basic vocabulary enabling them to read aloud with understanding, to pronounce accurately, to recognize and use appropriate grammatical structure, and to write and translate sentences for composition. 3 hours Lecture and Discussion—3 credits

LA 1160
German I
Instruction and practice in understanding and speaking the German language with stress on sentence structure, inflections, vocabulary, and pronunciation. 3 hours Lecture & Discussion—3 credits

LA 1212
Spanish II
A continuation of the study of basic grammar and vocabulary with emphasis on spoken and written Spanish, including the reading of carefully graded Spanish texts. Prerequisite: Spanish I. 3 hours Lecture and Discussion—3 credits

LA 1214
French II
Students will refine skills of vocabulary-building, speaking, reading, and translating. Prerequisite: French I or equivalent. 3 hours Lecture and Discussion—3 credits

LA 1223
Campus Leadership Training
This course is designed to provide a framework for developing leadership skills. Emphasis includes active communication, team building, intervention strategies, decision making, and problem resolution. Students wishing to apply for campus leadership positions including Peer Advisors, Resident Assistants, Diplomats and Student Government leaders are encouraged to take this course. The course is open to second semester freshmen, as well as sophomores and juniors. 1 hour per week—1 credit, Pass/Fail
LA 1261
*German II*
Instruction and practice in understanding and speaking the German language with increasing emphasis on reading and writing the language. Prerequisite: German I or Equivalent. 3 hours Lecture and Discussion per week—3 credits

LA 2005
*Speech*
Experience is stressed in preparation, delivery, and criticism of speeches on a variety of topics. Speeches include personal experiences, manuscript readings, demonstration, informative, and persuasive with a goal of attaining extemporaneous skill in delivery. 3 hours Lecture and Discussion—3 credits

LA 3008
*Student Government*
Students receive 1/2 credit on a pass/fail basis for devoting active participation in the activities of student government. They include, but are not limited to, maintaining an office for a class year or on Student Government itself, serving on committees like SAC, being an officer in a club and representing that club at Student Government. A short paper is required each semester for students on the Student Government Board who desire credit. To receive credit, students must sign up for it at the Registrar’s Office. 1/2 credit, Pass/Fail

LA 3139
*Introduction to Research*
This course is designed to introduce students to the requirements, philosophy, and methods of scientific research. Topics will include experimental design, scientific methods, grants and funding, communications, searching methodology, ethics, selecting a graduate program, dissection and analysis of research papers, research style, and the administration of research projects. 3 hrs per week—3 credits

**Humanities**

LA 0040
*A Day Leadership Laboratory*
The student leaders who manage the College’s annual “A” Day exposition may earn credit for their management role; 1/2 credit per semester of leadership participation; may be accumulated to a maximum of 4 semester credits. Pass/Fail

LA 1015
*Music Appreciation*
The music of each period of history is interpreted and analyzed with a view of understanding and appreciating our musical heritage. Illustrations for the works of the great composers are presented to assist in the establishment of criteria for evaluating music. 3 hours Lecture and Discussion—3 credits

LA 1020
*Skills for College Success*
The goal of this course is to improve your learning abilities and to sharpen your ability to think— to think clearly, to think logically, to think critically, and to think effectively. Effective learners and thinkers are able to reach their goals, solve problems, and make informed choices in every area of their experience. This course is also your introduction to the ideals and values of the academic community, and you will learn about the key abilities and dispositions of a liberally educated person. 1 hour Discussion - 1 credit.

LA 1058
*Community Concert Band*
This course provides students the opportunity to develop their musical skills through the study and performance of selected works for concert band. Performances are held on campus throughout the school year. 2 rehearsals per week—1 credit per semester

LA 1059
*Chorale*
This course provides students the opportunity to develop their musical skills through the study and singing of selected choral literature from various periods of music history. Performances are held on campus throughout the school year. 2 rehearsals per week—1 credit per semester

LA 1060
*Introduction to the Fine Arts*
This course studies the music of each period of history. Illustrations from the works of the great composers are presented to assist in the establishment of criteria for evaluating the music. One field trip is taken to The Philadelphia Academy of Music for the purpose of studying the orchestra in a rehearsal setting. This course also examines painting, sculpture, and architecture in history to increase the student’s ability to interpret and appreciate works of art. 3 hours Lecture and Discussion—3 credits
Course Descriptions

LA 1225
Critical Thinking
The goal of this course is to sharpen ability to think clearly, logically, critically, and effectively. Thinking effectively is also necessary to communicate effectively, solve problems and to make the best choices. This course is designed to increase and focus your thinking abilities by using a variety of methods - lectures, class discussions, readings, written assignments, problem-solving activities, and examinations. Your success in the course depends on your willingness to commit to developing the thinking potentials that you possess. 1 hour Lecture—1 credit

LA 2042
Introduction to Philosophy
This course is a historical approach to Western philosophy. Major figures from the Greeks to contemporary philosophers are treated. 3 hours Lecture and Discussion—3 credits

LA 3022
Acting I
This course provides students with a safe and respectful atmosphere in which to explore the actor’s craft. The student not only learns how to act but how to use acting in common situations. 3 hours Lecture and Laboratory—3 credits

LA 3024
Acting II
This course prepares the student for specific roles. The actors will be matched to parts for which they seem most suitable and will learn how to break down a role emotionally and physically. By the end of the course they will prepared to begin rehearsals for a production. Prerequisite: Acting I or equivalent experience. 3 hours Lecture and Laboratory—3 credits

LA 3025
Acting III
This course leads the actor through the production process. There is a step by step plan in which the actor is moved from rehearsal through performance in some of America’s great plays. The plays will be chosen to suit the student’s abilities. Prerequisite: Acting II. 3 hours Lecture and Laboratory—3 credits

LA 3151, 3251
Studio Art I, II
Studio Art I is an elementary course in which the student is given the opportunity to find her/himself and the medium through which she/he wants to work. Studio Art II requires the student to express the self through the medium suggested by the instructor. Each course is a prerequisite for the following one. 2 hours Lecture and Practicum—2 credits for each course

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 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

Social Sciences

LA 2012
Introduction to Sociology
This course covers the nature and functioning of human culture, with special attention to the problems of modern Western society. The course centers upon the interaction of individual persons and the social groups in which they have membership. 3 hours Lecture and Discussion—3 credits

LA 2036
Introduction to Psychology
A study of the general subject matter in the field, including child psychology, heredity and environment, individual differences, the nervous system, personal adjustment, human development, intelligence, mental processes, and abnormal behavior. 3 hours Lecture and Discussion—3 credits
LA 2040
Modern History of Western Societies
This course provides a comparative history of modern Western civilization, beginning with the era of scientific, political and industrial revolutions, since the 16th century. Through the discussion and analysis, the student should gain a deeper understanding of their modern western world and how it came to evolve. 3 hours Lecture and Discussion—3 credits

LA 2138
History of Western Civilization I
A survey of the developments of western societies and ideologies from the origins of civilization in the ancient Near East to the mid-seventeenth century. 3 hours Lecture and Discussion—3 credits

LA 2224
Pennsylvania History and Government
Surveys political, social and cultural developments in the Commonwealth from Penn’s Charter until the present day, with special consideration of the role of Bucks County. Students will be required to participate in fieldwork at Delaware Valley College’s Roth Farm and Living Museum. 3 hours Lecture and Discussion—3 credits

LA 2230/ED 2230
Educational Psychology
A practical treatment of the theory and practice of teaching and learning and their application in the classroom, family, and community. Topics include: conditioning, cognitive processes, motivation, testing and grading. ED 2230 open to Education majors only. Any student may take the course with an LA prefix. 3 hours Lecture and Discussion—3 credits

LA 3031
American History and Government to 1877
A survey of political, social, and cultural developments from colonial times through the period of Reconstruction. 3 hours Lecture—3 credits

LA 3032
American History and Government Since 1877
A survey of political, social, and cultural developments from 1877 to the present. 3 hours Lecture—3 credits

LA 3034
Adolescent Psychology
This course studies the development and behavior of adolescents with a focus on understanding the adolescent in terms of family, peers, school, culture and the community at large. Identity development, delinquency and sexuality will all be examined with an emphasis on how to provide services to the adolescent in need. Prerequisite: Introduction to Psychology or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

LA 3101
Cultural Anthropology
This course examines the origins of human culture, with emphasis upon cultural and social organization, the impact and influence of cultural change upon such organization, and the traditions, rituals and relationships that define human civilization. 3 hours Lecture—3 credits

LA 3132
Comparative Politics
This course offers a comparative analysis of European, African, Asian, Middle Eastern, and Latin American political systems. 3 hours Lecture—3 credits

LA 3240
Political and Cultural Geography
The significance of contemporary world patterns of nations is considered through the interaction of their physical, economic, political, and cultural aspects, with an emphasis upon the interplay between population, migration patterns, language, religion, and political developments. 3 hours Lecture—3 credits

LA 3241
Invention and Technology in America
Examines the influence of agricultural, mechanical, technological, and scientific change upon the United States from colonial times to the present. Students will be required to participate in fieldwork at Delaware Valley College’s Roth Farm and Living Museum. 3 hours Lecture—3 credits

LA 4014
Abnormal Psychology
This study of abnormal psychology in American society, including its occurrence, condition, and treatment, emphasizes the maintenance of good mental health. Topics include mood disorders, substance abuse, brain disorders and dream analysis. Prerequisite: Introduction to Psychology. 3 hours Lecture—3 credits
Course Descriptions

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 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 relate 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, groupthink, 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

MATHMATICS 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

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 sequence. Students assigned to this course are required to take in addition MP 1102 College Algebra and MP 1203 Elementary Functions. 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.)
Course Descriptions

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 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 relate 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, groupthink, 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

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

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 sequence. Students assigned to this course are required to take in addition MP 1102 College Algebra and MP 1203 Elementary Functions. 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 its equivalent, as determined by the department. 3 hours Lecture and Discussion—3 credits.

MP 2116
Statistical Quality Control
This course provided 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 principles 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.
**Course Descriptions**

**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.

**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 & 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 & 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 distribution 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 Research*  
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. Not open to majors in Business Administration. Prerequisite: Elementary Functions. 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 Schmieder 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 Schmieder 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