

Course Descriptions

Employment Program

AB 2370

Employment Program

Each student in Agribusiness 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.

Agronomy and Environmental Science

AE 1120

Sustainability: Saving the Earth and Feeding the People

Environmental issues facing the rural and urban environment are discussed. Addressing environmental issues requires interaction between technical, economic, and social forces. This course will ask the student to consider these forces on a local and global basis as well as the knowledge base. 3 hours Lecture — 3 credits

AE 2004

Soils

An introductory course in soils. This course deals with the concepts and terminology to understand soil development, soil formation and composition, the physical, chemical and biological properties and processes in soils. Soil classification, soil conservation, and nutrient systems are also introduced. Chemical and physical properties as they relate to environmental concerns are reviewed. Laboratory demonstrations and exercises parallel selected portions of the lecture material. Prerequisite: General Chemistry or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory — 3 credits.

AE 2007

Feed Grains and Forages

This course covers the establishment, production, harvesting, uses and management of the main feed grains and forage crops with special emphasis on the crops grown in the northeastern region of the United States. Prerequisites: General Chemistry II or Biological Science II. Required for Large Animal Science and Dairy Science Majors. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2013

Agricultural Machinery

This course covers the use, care, operation and adjustment of the most common equipment and machinery

used in agriculture. Special emphasis is placed on the actual operation of equipment. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in alternate years. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2017

Topographical Surveying

This course includes land surveying principles, use of survey instruments, field methods, data collection, and an introduction to Geographical Information Systems. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2100

Agricultural Building Practices and Materials

This course stresses construction practices and skills particularly applicable to agriculture. Included are reading and interpreting building plans, estimating and selecting materials, hand and power tool use, carpentry, plumbing, electrical and masonry skills, and agricultural construction projects. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in spring in even numbered years. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2201

Agricultural Engines and Power Application

This course focuses on the study of gasoline and diesel internal combustion engines and two- and four-stroke cycle small engines with emphasis upon agricultural applications. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in alternate years. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2202

Field Crops I

Agronomic crops are those that produce fiber, vegetable oils, animal feed, processed human foods, and industrial raw materials. This course provides students with an overview of the production, regionalism, and uses of agronomic crops, particularly those grown in North America. All steps in the production of crops are covered, however, spring-season management practices are emphasized. Students design demonstration plots for public viewing. Previous farm experience is NOT necessary for this course. Crop science majors must take Field Crops I during the spring immediately before taking Field Crops II (Offered every other year). Prerequisite: Natural Science I and Chemistry Fundamentals or Biological Science I. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 2209

Soil Fertility and Fertilizers

The role of essential elements in plant nutrition is discussed as well as practical applications in the area of soil deficiencies. Emphasis is placed on fertilizer types, usage, and applications for various agronomic and horticulture crops. In the laboratory, emphasis is placed on instrumentation and methodology for solving soil fertility problems. Prerequisite: Soils. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3000, 4000

Selected Topics I and II

Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credits accepted toward graduation is limited to 6 credits. 3 hours of student/faculty instruction per week per credit — 1-3 credit(s) each

AE 3102

Field Crops II

This course covers in detail the production practices of some of our major crops. Students learn to evaluate management techniques based on their economic and environmentally sound potential. As this is a fall course, the focus is on fall-season production activities. Students use field plots to evaluate how different management decisions made in the previous spring affect the crop in the fall. Farm experience is NOT required. Crop science majors must take Field Crops I during the spring immediately before taking Field Crops II. Prerequisites: Feed Grains and Forages, or Field Crops I. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3103

Soil Judging

Enrollment in Soil Judging is limited in number and is open to full-time students. A wide range of soils are evaluated, classified and interpreted based upon morphology, soil profile and site characteristics. An intercollegiate Soil Judging Team is selected from students taking the course and some travel will be required. The Soil Judging Team competes in the Northeast Regional Contest and may qualify for the National Collegiate Soils Contest. Prerequisite: Soils. 3 hours Laboratory — 1 credit

AE 3104

Field Soil Morphology

The examination of soils in the field is treated for the purpose of their classification, recognition and understanding of their parent materials, physical and chemical properties, and to understand their relationship to topography. Prerequisite: Soils. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3105

Soil Conservation

The need for soil and water conservation is stressed as it relates to rural and urban situations. The main causes of soil and water losses are evaluated and protective measures are discussed and designed. The laboratory deals with the practical application of designs discussed in lectures. On-site layouts for several conservation projects are required. Several field trips are taken during the semester. Prerequisites: Soils and Algebra. Recommended: Topographical Surveying and GIS. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3107

Environmental Geology

This course is designed to acquaint the students with basic processes and relationships in physical geology. Landscape evolution, rock and mineral types, mountain building, and glaciation are among the topics discussed. Laboratory work centers on recognition and interpretation of landscape features shown on topographic maps and aerial photographs. Field trips are conducted to illustrate material. 3 hours Lecture and Discussion — 3 credits

AE 3108

Irrigation Technology

This course introduces basic irrigation techniques and planning, design and maintenance of irrigation systems. The interdependent relationships of soil, plants and water is stressed. Field trips, guest lectures, and a class project are highlights of the course. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3114

Introduction to Turf Management

The course covers the basic principles of turfgrass culture. Laboratories emphasize practical aspects of turfgrass identification, fertilization, pest control and maintenance by mowing, aerifying, renovating, and other practices. Several field trips are taken to the golf courses and sod farms in Bucks County and vicinity. 2 hours Lecture and 3 hours Laboratory — 3 credits

Course Descriptions

AE 3115

Turf Pest Management

This course covers identification and various control measures of turfgrass pests including weeds, insects, and diseases. Emphasis will be on integrated pest management systems. Prerequisite: Introduction to Turf Management 3 hours Lecture — 3 credits

AE 3125

Principles of Ecology

This course is intended to provide Continuing Education students who are enrolled in the Environmental Studies Certificate Program with a basic understanding of the concepts and principles of the science of ecology. It is strongly recommended that this be the initial course taken by students in the aforementioned program. There are no prerequisites and it is not to be substituted for the 4 credit Ecology course offered by the Biology Department. 3 hours Lecture — 3 credits

AE 3127

Agricultural Entomology

Many biologists believe that the number of insect species globally is in the millions. Fortunately, only a very small number of them have a significant economic impact on agriculture. However, left unmanaged, those few species can cause tremendous loss to agricultural production. In this course, students learn to identify many of the agriculturally important insects of the eastern United States. Students learn their life-cycles, weaknesses, and host crop species. Students learn the principles of the insect-host-management complex. Prerequisite: Biological Science II. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3140

Environmental Impacts

This course examines current practices and policies within our society and their effect on air, land and water quality. Alternative methods are proposed and analyzed, including the role of individuals and governments in curtailing activities which are destructive to the environment. Presentations, discussion and case studies are offered by environmental specialists and administrators from the private and public sector, as well as government legislators and representatives of local, state and federal regulatory agencies. 3 hours Lecture and Discussion — 3 credits

AE 3145

Land Planning and the Law

This course provides an understanding of the environmental issues within both the public and private sectors, as well as the laws, rules and regulations that are now in place or pending, and which are designed to preserve and improve our environment. Students complete an environmental topic report with guidance from an environmental specialist, business entity or government agency. Classroom lectures are supplemented by presentations by guest lecturers. 3 hours Lecture — 3 credits

AE 3202

Plant Breeding

Humans have been genetically improving plants since the beginning of plant agriculture. In this course the roles of genetics and the environment on plants' appearance and behavior are studied. Students learn several techniques used by plant breeders and the seed industry in producing new cultivars. Discussions include benefits and hazards of plant breeding and biotechnology, the importance of protecting sources of genetic diversity, and some legal issues involving plant breeding. Prerequisites: Botany of Vascular Plants, and Genetics (concurrently). 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3210

Global Crop Ecology

Why do farmers grow what they grow where they grow it? How might a good growing season in a country like Brazil be a cause of concern for a soybean producer in the United States? If rice is so important to the Asian diet, why is China the greatest producer of wheat? Students investigate how different soils, climates, economic conditions, and cultures determine the dominant crop species of various regions of the world. Some discussions on modern land-use policy and international trade agreements are included. Prerequisites: Field Crops I or Soils. 3 hours Lecture — 3 credits

AE 3216

Soil Classification

Fundamental concepts of soil formation and classification are reviewed with special emphasis placed on field investigations. Soil survey interpretations and land use concepts are related to the properties of the soil. Environmental considerations in land use planning are emphasized. Pre-requisite: Environmental Geology or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3220

Watershed Management

The objectives of the course are to (1) provide a basic understanding of hydrologic processes, (2) understand the effects of urbanization and industrialization on water resources, (3) examine ways to properly use and maintain water resources, and (4) provide some practical experience working with environmental problems concerning water resources and hydrological processes. Prerequisites: Algebra and Soils. Recommended: Topographical Surveying and GIS. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3230

Turf Cultural Systems

This course covers the primary and supplementary turfgrass maintenance practices and their interrelationships. Turfgrass establishment, fertility, soil modification, mowing, top dressing, irrigation and their interrelationships will be discussed. Highlights include field trips, guest speakers, and the development of a cultural management plan by each student. Prerequisites: Soils and Introduction to Turf Management. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 3250

Introduction to Environmental Remediation

This course will provide the student with an introductory knowledge of the strategic and practical processes of identifying, assessing, and remediating the hazards posed by environmental contamination — 3 credits

AE 4010

Soil and Environmental Planning

The role of soils in the environmental planning process is examined. Interactions of soils and wastes, health aspects and regulatory aspects are reviewed. Land waste utilization and disposal methods are reviewed. Environmental impact assessment methods are examined. Prerequisites: General Chemistry I and II, Soils or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 4015

Regional Land Use Planning

The course is designed to introduce students to the concepts of planning for regional systems. Planning as a rationalized decision-making process is examined. Regional systems are discussed in a wide context, including social, economic, and environmental aspects. 3 hours Lecture and Discussion — 3 credits

AE 4016

Hydrogeology

The course is designed to acquaint the student with ground water supplies, movement, quality, and methods of measurement. Prerequisites: General Chemistry I and II, Hydrology or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

AE 4025

Climatology

This course investigates some of the physical causes of weather phenomena, thus, students gain an ability to make weather predictions. Students use their knowledge of weather to understand why different types of climates occur in different regions of the world. With an understanding about a region's climate, students investigate how climate affects human activities, such as agriculture, building design, management of water and energy, and health policy. Prerequisite: General Chemistry II 3 hours Lecture — 3 credits

AE 4041

Senior Research

Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to agronomy. 1-3 credits

AE 4043

Applied Toxicology and Risk Assessment

Knowledge of toxicology and application of principles in the assessment of environmental risks is central to environmental regulation and protection. This course covers the fundamentals of toxicology and the risk assessment process as they relate to regulation of commonly used and encountered chemicals. 3 hours Lecture and Discussion — 3 credits

AE 4116

Weed Science

In this course, emphasis is given to the biology of weed plants and weedy species. Students study the interactions between desired plants and weed plants as well as the reactions of weed plants to various environmental conditions and management practices. Much of the course outlines the many methods used, including non-chemical methods, to reduce the harmful effects of weed plants. With a goal toward minimal environmental impact and maximum economic benefit, students will learn how to properly mix, apply, and discard herbicides. Prerequisite: Botany of Vascular Plants 2 hours Lecture and 3 hours Laboratory — 3 credits

Course Descriptions

AE 4131

Auto CAD

This course teaches how to use AutoCAD, a computer aided design tool, in the production of landscape and drafting designs. The student will learn the basics of creating a design using the computer and many of the advanced features a CAD program makes available. 3 hours Lecture and Practicum — 3 credits

AE 4211

Seminar (Agronomy)

The course includes student reports and discussion on recent scientific findings in soils, field crops, and related subjects. 4 hours Discussion — 4 credits (one credit per year)

AE 4218

Seed Science

The uses of seeds can be grouped into two categories: 1) seeds are sold to growers for agronomic and horticultural plant production; 2) seeds are raw material to be transformed into useful products such as chemicals for manufacturing animal feed, and human foods. This course investigates how seeds are produced, harvested, cleaned, stored, and marketed. Discussions about the role of biotechnology, state and federal regulations, international trade agreements, and environmental protection will be included. Prerequisite: Field Crops I or Soils. 3 hours Lecture and Discussion — 3 credits

AE 4222

Golf Course Design and Construction

This course covers the basic principles, practices, and procedures of golf course design and construction. Highlights include a field trip to local golf courses and a design project. 3 hours Lecture and Discussion — 3 credits

AE 4230

Case Studies in Turf Management

In this advanced course students will improve their competence and confidence in solving problems in turf management. Students will be presented with actual turf management problems from a wide array of turfgrass systems and they will develop, describe, and defend their solutions both orally and in writing. Prerequisites: Introduction to Turf Management, Turfgrass Cultural Systems, and Turfgrass Pest Management, or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

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AE 2370

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ANIMAL BIOTECHNOLOGY AND CONSERVATION (ABC)

SA 1105

Introduction to Animal Management

This introduction will emphasize animal care and management in relation to animal characteristics, control, handling, restraint, animal facility design, and legal compliance. Students will become acquainted with a variety of animals, their origin, characteristics, and usage. Basic experimental techniques will be acquired in the laboratory component of the course. Fall semester. 2 hours Lecture and 3 hours Laboratory-3 credits

SA 2001

People and Animals

The student will learn about the relationship between people and animals through domestication, religion, culture, farming, research and pets. The role of pets in the family will be examined. The role of animals in human health and the effect of humans on animals will also be discussed. This course is a prerequisite for Animal Assisted Activities and Therapy. Fall semester. 3 hours Lecture and Discussion — 3 credits

SA 2101

Animal Assisted Activities and Therapy

The course explores the use of AAA and AAT in different fields including education, psychology and physical therapy. By exploring the different areas, students will learn how to develop, present and implement an AAA/AAT program and gain an understanding of the responsibilities that go along with such programs. Prerequisites: People and Animals. Spring semester. 3 hours Lecture and Discussion — 3 credits