

Core Courses

Economics is Everywhere! Some Key Concepts to Understanding the Agriculture Economy (All students)

Dr. Mike Ellerbrock

Students will learn how economics relates to their everyday lives and the world around them through discussions of the economic development, poverty, comparative advantage, financial planning, and the business of doing business.

Dairy Science 101: From Cow to Table (All Students)

Mr. Dave Winston, Dr. Ben Corl, and Dr. Christina Petersson-Wolfe

In 2014 Americans consumed 614 pounds of dairy products per capita, a 13.9 percent increase in consumption since 1975. However, few understand the science and technology that are involved in producing, harvesting, processing, and marketing milk and milk products. This class will provide a basic overview of the dairy community and will cover dairy trends in production and manufacturing, physiology of lactation, and milk quality and safety. A field trip to the Virginia Tech Dairy Center at Kentland Farm will highlight precision dairy technology used to improve animal well-being and management. Educational and career opportunities will be explored.

It's Not Your Grandfather's Farm (All Students)

Dr. Bain Wilson and Andrew Weaver

Introduction to the Animal Sciences is designed to expose students to the broad scope of the animal sciences, ranging from the basics of animal husbandry to cutting edge research involving animals. Emphasis will be placed on the applied biology related to the nutrition, reproduction, genetics, and well being of domestic animals.

Natural Energy (All Students)

Dr. Henry Quesada-Pineda, John Ignosh, Jeremy Withers, and Dr. Matthew Kuester

Provides a general introduction to sustainable energy, with emphasis on energy produced utilizing biomaterials, sun, and wind. Students will experience working with a bio generator, solar pump and a wind tunnel. This team-taught course also covers recent trends in energy systems.

Plant Sciences Introduction: Crop production, the Environment, and the Role of Biotechnology (All Students)

Dr. Tom Thompson, Dr. Elizabeth Grabau, Dr. Ryan Stewart, Ben Averitt, Gabriel Pent, Steve Haring & Dr. John Galbraith

In this course, we will explore the use of biotechnology in crop production in Virginia and around the world. We will examine the advantages and disadvantages of transgenic crops with regard to environmental sustainability while exploring the production systems of important staple crops.

Blogging Your Thoughts (All Students)

Adam Cletzer

As many agricultural associations and commodity groups migrate from printed communication to online, blogging is playing an increasingly important role in the agriculture industry's communication strategy. This introduction to blogging is designed to help students be clear, concise, and effective bloggers. We will discuss the basics of formatting, structure, and images, as well as the principles of news writing.

Communicating in the Scientific World (All Students)

Kyrille DeBose and Inga Haugen

The purpose of the course is to develop skills in written and oral communication. The course will specifically focus on skills in scientific writing, creating brochures, creating scientific posters, and public speaking with and without PowerPoint.

Careers in Agriculture (All Students)

Jeremy Elliot-Engel and Ryan Amaral

A survey of opportunities for careers in agriculture. Students will explore potential careers in agriculture and complete an assessment matching personal strengths and skills to qualifications needed for specific careers. Students will also learn about the career services available at colleges, tools available for seeking employment after graduation, and how to network with professionals in the agriculture industry.

Major Courses – Series 1

Introduction to Biological Systems Engineering (Agricultural & Biological Systems Engineering Majors Only)

Erin Ling, Chelsea Corkins, Dr. Justin Barone, Dr. Frank Gillam, and Dr. Karen Kline

Biological Systems Engineering (BSE) is the engineering discipline that applies concepts of biology, chemistry and physics, along with engineering science and design principles, to solve problems in biological systems. This course will explore a broad range of biological systems, from natural systems, such as watersheds with a focus on water resources, to built systems, such as bioreactors and bioprocessing facilities.

Choosing Wisely: What Economics Has to Offer (Agricultural Economics Majors Only)

Dr. Mike Ellerbrock

Students will learn in the basics of economic decision-making and how markets operate. Students will participate in microeconomic applications by investigating what can be done to successfully manage our natural resources.

Focus on the Animal Sciences (Animal Science Majors Only)

Dr. Bain Wilson, Andrew Weaver, Kevin Young, Chad Joines, McCauley Vailes, and Jordan Wicks

Each day's session will focus on an aspect of the animal sciences, based on species, purpose, and/or discipline. Students will explore and apply practical concepts related to animal husbandry and survey the most recent research occurring at Virginia Tech with respect to animal science.

Food Science: Fermented Foods and Food Additives (Food Science Majors Only)

Dr. Sean O'Keefe

In this class we will study the fascinating world of fermented foods. Our ancestors thousands of years ago had no refrigeration and no stores, and they used fermentation to save and process foods, improving nutritional value along the way. We will also look at additives used by the food industry, what they are, why they are used and what regulations they follow.

Plant Sciences Introduction: The Big Data Revolution in Agriculture (Plant Science Majors Only)

Dr. Song Li, Dr. Aureliano Bombarely, Dr. Sai Karyala, Dr. David Haak, and Dr. Wade Thomason

Students will explore how genomic data can be used to improve crop production by decoding genome evolution and examining future ideas for plant domestication. Students will visit computing facilities and see how selective breeding and biotechnology can be used to identify stable resistance traits. Finally, opportunities and challenges will be reviewed for implementing precision agriculture in Virginia.

Major Courses – Series 2

Orientation to Biological Systems Engineering (Agricultural & Biological Systems Engineering Majors Only)

Erin Ling, Chelsea Corkins, Dr. Ryan Senger, Dr. Warren Ruder, Dr. Laura Hanzly, Qualla Ketchum and Teneil Sevills
Learn about watershed science and engineering through hands-on activities. Students will conduct an experiment using a rainfall simulator to examine the effects of land cover on runoff volume and pollutant loss. An introduction to the field of Metabolic Engineering will be given followed by hands-on applications with cyanobacteria that draw CO₂ out of the atmosphere, plants engineered to produce valuable chemicals, and three-dimensional computer models that demonstrate the intersection of biology and mathematics. Students will then visit the StREAM Lab, a living, learning outdoor laboratory in and on Strouble's Creek in Blacksburg.

Introduction to Agricultural Marketing: You and Your Communication Strategy (Agricultural Economics Majors Only)

Dr. Kimberly Morgan

In this class students will complete the 20-question True Colors Personality Quiz and participate in a group activity and discussion about our findings. Students will examine the 4 P's of marketing which directly affect consumer purchasing behavior. Finally, students will select an agricultural product and develop a marketing communication strategy.

Medicine Across the Species (Animal Science Majors Only)

Lynn Blevins, Dr. Sherrie Clark-Deener, Dr. Carling Sitterley, Dr. Stefanie Demonaco, Dr. Valerie Ragan, and Dr. Lara Bartl

Each day's session will focus on an aspect of veterinary medicine, based on species, purpose, and/or discipline. Topics include: companion animal care and prevention, food animal health care, preventing and treating toxicities in animals, and imaging in the dark.

Food Safety for Ready-to-eat and Ready-to-heat Foods (Food Science Majors Only)

Dr. Joe Eifert

Many technologies are used in foods to prevent spoilage, ensure product safety, enhance taste, improve nutrition, reduce costs and increase convenience. Hamburgers will be used as an example to highlight the food technologies necessary to produce a ready-to-heat or ready-to-cook food. Breakfast cereals and military meals will be used as examples of ready-to-eat foods.

Global Food Security (Plant Science Majors Only)

Dr. Tom Thompson, Dr. Steven Hodges, Dr. Ozzie Abaye, and Dr. Takeshi Fukao

This course will explore what food security means, why it is important, and how plant sciences can help solve global food security to assist in feeding the world's billions of people. Different approaches will be explored to best meet the food needs of the world, given improvement in crops, molecular breeding, within the complex issues associated with our global food systems.

Elective Courses

Week 4

Aesthetic Horticulture: Combining Art and Science in Floral Design

Andy Metzler and Barbara Leshyn Kraft

Application of design elements and principles in creation of a variety of floral designs for the home, including bud vases, centerpieces, flowers to wear, and a special party design. Background info includes obtaining and preparing flowers, working with containers and design aids, and maintaining flower quality. No previous experience needed.

Animal Reproduction

Brittany Castle

How animals reproduce is both a fascinating topic and critically important for good animal management. The basic principles of male and female reproduction are explained. Domestic mammals are discussed providing a sound basis for both agriculturists and those interested in fertility in any species.

Aquaculture and Seafood

Dr. David Kuhn and Dr. Stephen Smith

Seafood is the only major food that we consume that is still captured from the wild. Since the wild fisheries cannot sustain the demand of seafood by humans, aquaculture is expanding rapidly. In fact, last year, approximately 50% of the seafood that we consume came from aquaculture. In this course you will be introduced to seafood (selection, cooking, and consumption), aquaculture (production methods, engineering, feeding, and water quality), and fish biology (fish anatomy, physiology, and important diseases). Non-lecture activities include a tour of one of Virginia Tech's aquaculture laboratories, cooking and eating seafood, and the dissection of a fish to learn about its anatomy.

Restoring Community Food Sheds

Liza Dobson and Dr. Susan Clark

Introduction to the economic, social, and ecological foundations of civic agriculture. Topics include localized food systems and citizen participation in civic agriculture. Emphasis will be given to a range of civic agriculture models, strategies, and hands-on approaches to establish, retain and strengthen community-based food and agriculture systems.

Thinking through Agricultural Systems

Dr. Pete Zeigler

Systems thinking is a methodology aimed towards understanding the complex dynamics of large-scale processes such as the interactions between human needs, food production, energy, and water. This short course will explore the basic concepts of the systems approach through brief lectures, discussions and group activities designed to increase student's appreciation of the need for interdisciplinary problem solving to address the broad range of scientific and societal challenges of the 21st century. This course is ideal for students interested agriculture and life science issues connecting society, health and the environment.