

**Keys to the Agriculture Economy: Principles and Principals...Profits and Prophets  
Agricultural Economics Core (All students)**

*Course Description:*

Students will learn how economics relates to their everyday lives, through discussions of the diamond/water paradox, economics of love, comparative advantage, and the valuation of endangered species.

**Leading Thinkers and Thinking Leaders  
Agricultural Economics In-Major (Ag. Econ Major Only)**

*Course Description:*

Students will learn microeconomic applications by undertaking a computer simulation where students serve as the managers of an operating agribusiness; by reaching consensus in a business decision-making module; by trying to enhance their personal situation through a trust, learning, and cooperation game; and by seeing financial tools applied to their personal situations.

**Agricultural Leadership Core (All Students)**

*Course Description:*

This series of four Leadership Development sessions will focus on your role as a 21<sup>st</sup> Century Leader student, community member, and future professional. You will look at your own strengths, the qualities of your relationships, as well as the value schools and employers place on teamwork, collaboration and engagement. Finally, you will meet some of Virginia's agricultural leaders to hear their view of leadership and its value for your success.

**Agricultural Leadership In-Major (Ag. Leadership Major Only)**

*Course Description:* The focus of In Major Leadership Development is to learn about personal traits and preferences, building alliances, developing high performing teamwork, and addressing conflict and success. This session will enable you to develop the skills needed to address a critical leadership issue (project) that demonstrates exceptional value, quality, innovation, as well as evidence of engagement of team members and partners.

**It's Not Your Grandfather's Farm  
Animal Science Core (All Students)**

*Course Description:*

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.

**Focus on the Animal Sciences  
Animal Science In-Major (Animal Science Major Only)**

*Course Description:*

Each day's session will focus on an aspect of the animal sciences, based on species, purpose, and/or discipline.

**Introduction to Renewable Natural Resources  
Natural Resources Core (All Students)**

*Course Description:*

An introduction to natural resource management and use in forestry, wildlife, fisheries, recreation, and forest products through field trips and outdoor experiences

**Forest Ecology and Management in the Southern Appalachians  
Natural Resources In-Major (Animal Science Major Only)**

*Course Description:*

Geology, soils, trees, and wildlife that occur in the Appalachian mountains and how foresters manage them to provide products and maintain healthy ecosystems.

**Agroecosystems and World Food Supply  
Plant Science Core (All Students)**

*Course Description:*

1. Acquaint students with the worldwide importance of agriculture and food production.
2. Introduce students to the broad range of scientific and vocational opportunities available in the plant sciences.

**Plant Propagation and Aesthetic Construction  
Plant Science In-Major (Plant Science Major Only)**

*Course Description:*

Coverage of important aspects of sexual and asexual propagation of plant material, supplemented with hands-on experiences in creative plant constructions.

**Topics in Veterinary Medicine  
Vet Medicine Core (All Students)**

*Course Description:*

Major Topics of public interest:

- Radiography (x-rays) and other medical diagnostic imaging
- Cancer-a disease of people and animals
- Mad-cow disease (BSE)-The science and the politics
- “What’s going on in the Veterinary college?”-Tours of the facilities

**The 4-Day Vet School  
Vet Medicine In-Major**

*Course Description:*

Topics from the DVM Curriculum:

- Year 1: The Brain: The world inside your head
- Year 2: Scary bugs and animal and human diseases
- Year 3: Physical/Clinical Examination of your dog
- Year 4: Physical/Clinical Examination of sheep and/or cattle

**Food Process Engineering  
E1**

*Course Description:*

The course will introduce the students to biological systems engineering, in general and food process engineering in particular. Materials will include some of the basic understanding on why and how we process food and provide opportunities for the students to have hands-on experience into some interesting food processing methods. Students will also have an opportunity to work with instruments like a color meter, electronic nose, and ultrasound used in food quality measurements.

**Equine Science**  
**E2**

*Course Description:*

This course will cover basic horse management principles with an opportunity for hands on learning.

**Anatomy and Physiology**  
**E3**

*Course Description:*

Anatomy and Physiology is a week full of excitement entwined with massive amounts of learning and appreciation for the subject matter. Hold on to your hat because this course will cover multiple topics including gross comparative anatomy, special senses, the circulatory system, and an introduction to the many current physiological assays. Students are expected to participate during class and HAVE FUN. Not for the faint of heart...you will get bloody and dirty.

**Zoom, Zoom, Zoom Measuring Small Engine Performance**  
**E4**

*Course Description:*

A practical, hands-on look at the engineering behind small engine performance . Course will involve group work into the different areas of small engine performance. Student groups will investigate engine design, engine wear, fuel consumption, engine power, and engine noise. During the course students will learn the use of precision measurement tools and performance equipment such as tachometers and dynameters. Students will encourage the students' involvement in the FFA Agriscience student recognition program. Throughout the course the students will complete a basic outline of agriscience application for each aspect of engine performance they investigate.

**Medicine Across the Species**  
**E5**

*Course Description:*

Discussions designed to explore health and disease in a variety of animal species: horses, cattle, dogs, cats, and 'exotic' species.

**CSI: Blacksburg**  
**E6**

*Course Description:*

A crime has been committed and biotechnology can be used to solve it - but how can it be done? We'll use DNA isolation and fingerprinting to gather evidence from a crime scene

to solve a mystery. We'll also use immunological and epidemiological techniques to see how scientists track how a disease spreads through a population.

**Aesthetic Horticulture: Combining Art and Science in Floral Design**  
**E7**

*Course Description:*

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.

**Robotics in Agriculture**  
**E8**

*Course Description:*

Students will explore the history and future of robotics in agriculture. Through the use of Lego-Mindstorm Kits students will learn the basics of robot construction and programming. Students will evaluate the performance and construction of a large scale agricultural robot (farmbot). By using gps and fly by wire systems students will develop control systems for agricultural robots.

**Enzymes: Nature's Catalysts**  
**E9**

*Course Description:*

Virtually every chemical reaction that occurs within a cell is catalyzed by an enzyme. Enzyme-catalyzed reactions are routinely used in various agriculturally related fields such as biochemistry (exploration of basic processes within the cell) and biotechnology (cloning and expression of a specific gene). Enzymes continue to be prominent in medical diagnosis and treatment. A basic understanding of the properties of enzymes will prepare students for future studies in agricultural and biological sciences.

**Using GIS and GPS for Agricultural and Environmental Planning**  
**E10**

*Course Description:*

This course will teach students how to use sophisticated geographic software and digital data to make maps of land uses and resources in Virginia, including using free aerial photos and GPS units for planning purposes.

## **Animal Reproduction E11**

### *Course Description:*

Animal Reproduction is an intense three day course exploring all aspects of animal reproduction. Aspects include, but are not limited to: cellular reproduction, reproductive management, *in vitro* techniques, pregnancy, cycles, gross anatomy, and physiology. You will probably get dirty during every class. This is a fast-paced and exciting course, so be prepared. Students are expected to participate during class and HAVE FUN. Not for the faint of heart...you will continuously be around blood, dead animals, fetuses, live animals, and other physiological substances.

## **Don't Beat Around the Bush: Landscape Appreciation E12**

### *Course Description:*

This course consists of a series of field trips in which students will fill out worksheets and take photos of the elements that make a garden “work.”

