



COLLEGE OF AGRICULTURE AND LIFE SCIENCES  
AGRICULTURAL AND  
APPLIED ECONOMICS  
VIRGINIA TECH.

# Online Masters of Agricultural and Applied Economics

**Knowledge elevates.**

**Data empowers.**

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# Greetings from the department head



*Matthew J. Holt*

Department Head and Professor

The Department of Agricultural and Applied Economics at Virginia Tech is educating innovative thinkers and empowering individuals with the knowledge needed to accelerate careers.

## COME JOIN US.

Our degree is the same cost no matter where you live. People choose our program for the convenience, the faculty support and expertise, and the degree recognition that comes with the Virginia Tech brand.

In a growing field, organizations have a need for professionals who are skilled in analyzing and interpreting data. With the master's in Agricultural and Applied Economics degree in hand, you will be prepared with the knowledge no matter the industry.

Let us help you take the next step.

## OUR SNAPSHOT

Ranked in the **top ten percent** worldwide of Institutions and Economists in the Field of Agricultural Economics.

Our **world-class faculty** hold awards for superb teaching, research, and outreach.

With **100+ years in education**, we were founded in the early 1900s to educate people in agricultural and applied economics, and we have been fulfilling that mission ever since.

# What to **expect**

## WE DEVELOP...

the **specialized skills** and **knowledge** needed in economic modeling, data analytics, econometrics, forecasting, and micro- and macroeconomics.

## OUR APPROACH...

**integrates tools** and **frameworks** with industry and government issues, complemented by applied coursework in commodity markets, pricing, and contemporary issues and responses in food systems.

## CAREER PATH...

market analyst, business strategist, policy analyst, commodities trader, supply chain logistics specialist, business economist, or other **data analytics-related** roles.

## THE DIPLOMA...

Virginia Tech's online degree program offers the **same** high-quality education as our in-person program and will not have the word 'online' written on the diploma.



# An overview



- **Semesters:** Spring, Summer, and Fall
- **Program structure:** Asynchronous course delivery in Canvas platform
- **Language of instruction:** English
- **No GRE required**
- **Cost:** Tuition rate through 2025 is \$1,075 per credit. The cost is determined by the Virginia Tech Board of Visitors annually. This is a self-funded graduate program.
- **Credits:** Up to 12 transferable credits are possible for specific courses, to be determined by the department
- **Degree granted:** Master of Science in Agricultural and Applied Economics

24 months to complete

30 credit hours

100 percent online

## FIRST COHORT GRADUATES:

The Farm Credit Administration (FCA) saw the benefits of the 100 percent online program, and in 2020, 14 of its employees entered the program to elevate their skillsets.

“These three projects provided excellent opportunities for FCA employees to use data analysis to address specific challenges the agency faces,” says Corey Adams, Ed.D., associate director of Learning and Organizational Change in FCA’s Office of Agency Services. “And the expertise they acquired while completing these projects will serve the agency well.”



*“My favorite part of the program was the ability to work on ag solutions with my coworkers through practical examples in class, like a case study on a farmer hit by processing slowdowns that have impacted my family’s farm as well. Also, I love being an official Hokie.”*

*Allie Wilson, '22 M.S., associate examiner*

# Application details



## Graduate School application deadlines

Visit the graduate school's website for more details on application deadlines.

- The **domestic application** deadline for Fall admission is August 1 and for Spring is January 1.
- The **international application** deadline for Fall admission is April 1 and for Spring is September 1.

>> <https://graduateschool.vt.edu/admissions/how-to-apply/deadlines.html>

## Requirements

- Basic statistics
- Intermediate microeconomics
- Introduction to differential calculus
- 3.0 GPA

*For those who would like refresher content prior to starting coursework, Canvas math modules are made available upon acceptance. For those desiring more formal background coursework, online calculus and statistics courses are available from your local community college or other educational institution.*

**Additional requirement information** >> <https://graduateschool.vt.edu/admissions.html>

## Graduate student guide to financial aid

The graduate student financial aid guide provides the basic information about the cost of attending Virginia Tech. This includes financial aid processes and programs, eligibility requirements, steps for applying and receiving aid, repayment, and options for additional financial aid resources.

>> <https://finaid.vt.edu/graduate-students.html>

# The curriculum

## Recommended sequencing for a typical part-time student entering the program in the Fall semester.

Scheduling will be adapted for students entering in summer or spring or desiring to take more or fewer classes per semester.

### Fall 1

- AAEC 5014 - Applied Economic Analytics (3 credits)
- AAEC 5025 - Applied Microeconomics (3 credits)

### Spring 1

- AAEC 5044 - Applied Macroeconomics (3 credits)
- AAEC 5804G - Fundamentals of Econometrics (3 credits)
- ALS 5024 - Building Multicultural Competence in Agriculture and Life Sciences (1 credit) - *This course may be taken in any fall or spring semester*

### Summer 1

- AAEC 5424 - Agribusiness Finance and Risk Management (3 credits)

### Fall 2

- AAEC 5084 - Contemporary Issues and Responses in Food Systems (3 credits)
- AAEC 5824 - Advanced Applied Analytics (3 credits)

### Spring 2

- AAEC 5134 - Agricultural Markets and Prices (3 credits)
- AAEC 5484 - Applied Economic Forecasting (3 credits)

### Summer 2

- AAEC 5904 - Capstone Project and Report (2 credits)

The program allows limited substitutions of agribusiness courses for select program requirements. These substitutions can be made after admission, following discussions with your advisor.

### Fall

- AAEC 5054: Strategic Agribusiness Management (3 credits)

### Spring

- AAEC 5074: Agricultural and Food Policy (3 credits)
- AAEC 5174: International Agricultural Development and Trade (3 credits)

### Summer

- AAEC 5034: Agribusiness Marketing Policy and Business Strategies (3 credits)

## WHAT SKILLS WILL I LEARN?

Data management and visualization in econometrics and forecasting

Technical skills in R and Python programming

Critical thinking and analytical skills required to frame business and policy questions using economic analysis

# Course descriptions

## **AAEC 5014 - Applied Economic Analytics (3 credits)**

Mathematical and statistical methods used in applied economic decision making. Applied mathematical optimization, statistical simulation, data visualization, probability theory and linear econometric models to economic, agricultural, and environmental data and problems. Extensive application of quantitative models and modern programming platforms used in applied economic analysis.

## **AAEC 5025 - Applied Microeconomic (3 credits)**

Basic economic theory of food and fiber production, food and fiber consumption, agricultural markets, and social welfare as influenced by the agricultural sector. Major emphasis placed on application of theory to current agricultural and resource problems.

## **AAEC 5044 - Applied Macroeconomics (3 credits)**

Nature and linkages between agriculture, natural resources, and macroeconomic variables. Theories and methods used to establish and quantify these linkages. Macroeconomic models to measure the effect of national output, unemployment, interest rates, economic growth, exchange rates, and allocation and distribution of resources on the agricultural sector, the environment, and the international economy.

## **AAEC 5084 - Contemporary Issues and Responses in Food Systems (3 credits)**

Economic analysis of food systems. Analysis of contemporary issues and responses in crop and animal production, food wholesaling, food processing, and food retailing. Economic incentives. Isolated, horizontally, vertically related markets and principal agent theory. Appropriate data and application determination. Directional impacts.

## **AAEC 5134 - Agricultural Markets and Prices (3 credits)**

Commodity price analysis, including theoretical relationships, analytical techniques and practical applications. Empirical evaluation and forecasting approaches including time series, structural, balance sheet, futures-based and hedonic models.

## **AAEC 5424 - Agribusiness Finance and Risk Management (3 credits)**

Introduction to corporate finance and risk management in agribusiness. Financial analysis, estimation of capital cost and valuation. Focus on risk management and Environmental and Social Governance (ESG) practices through case studies.

## **AAEC 5484 (STAT 5484) - Applied Economic Forecasting (3 credits)**

Forecasting economic, agricultural and environmental data using basic linear and non-linear time series models. Emphasis on programming and computational implementation of time series model-selection techniques and practical applications.

## **AAEC 5804G - Fundamentals of Econometrics (3 credits)**

Introduction to economic applications of mathematical and statistical techniques: regression, estimators, hypothesis testing, lagged variables, discrete variables, violations of assumptions, simultaneous equations, instrumental variables, panel data methods.



# Course descriptions



## **AAEC 5824 - Advanced Applied Analytics (3 credits)**

Advanced econometric analysis of problems in agricultural and applied economics. Modern techniques in Econometrics, machine learning, and data analytics including multiple regression, classification, instrumental variables, clustering, and regression trees.

## **AAEC 5904 - Project and Report (2 credits)**

Capstone course to apply data analytics skills to address a real-world problem.

## **ALS 5024 - Building Multicultural Competence in Agriculture and Life Sciences (1 credit)**

Diversity and inclusion within agriculture and life sciences in academic settings and communities: university, national, and global. Virginia Tech Principles of Community and appropriate avenues of redress. Shared responsibilities and issues of privilege, bias, power, prejudice, and discrimination. Governmental and institutional policies and their effects on diversity and inclusion.

## **Possible Course Substitutions**

### **AAEC 5034 - Agribusiness Marketing Policy and Business Strategy (3 credits)**

Marketing tools needed to identify and solve the complexity of marketing food and agribusiness products. Contemporary trends, marketing strategies, and problems in the food and agribusiness sector. Pre: Understanding of introductory microeconomic theory. Graduate standing required.

### **AAEC 5054 - Strategic Agribusiness Management (3 credits)**

Application of economic theory to operational and strategic decision-making in agribusiness. Analysis and application of the functions of management. Problem recognition and economic analysis of supply chain, marketing, financial, production, and human resource decisions facing agribusiness firms. Assessment of U.S. role in the international marketplace. Pre: Graduate Standing.

### **AAEC 5074 - Agricultural and Food Policy (3 credits)**

Policy issues related to trade, farm bills, natural resource preservation, and food, nutrition, and health. Global forces impacting U.S. policy. Local, state, and national legislative process. Stakeholder influence on the policy-making process. Policy impacts on stakeholders. Pre: Graduate Standing.

### **AAEC 5174 - International Agricultural Development and Trade (3 credits)**

Agriculture in world economic development, agricultural modernization strategies, and the effects of trade policies and agreements on agriculture. Dimensions of world food, population, income, and natural resource issues; technological and institutional change; trade, capital flows, and foreign aid.

# Our certificates

## Contact:

Shanshan Thompson, Recruitment Coordinator and Partnership Manager

shanshant@vt.edu | (540) 232-2215 | Corporate sponsorships and capstone project opportunities available.

## Applied Economic Analytics Certificate

### Students who complete the certificate program will be able to:

- Apply statistical properties and probability theory to agribusiness and applied economic data
- Employ advanced computational, statistical, simulation, and data visualization resources using modern statistical computing packages and tools
- Construct and implement mathematical optimization models relevant to applied economic decision-making
- Estimate statistical and econometric models for applied economic and agribusiness decision-making
- Formulate, specify, and estimate modern forecasting models
- Interpret statistical and econometric results from business, government, and academic research
- Evaluate the statistical integrity of predictive models and the accuracy of alternative forecasting methods
- Apply regression trees and machine learning methods to structured and unstructured data sets

### Courses

- AAEC 5014: Applied Economic Analytics (Fall 1)
- AAEC 5804G: Fundamentals of Econometrics (Spring 1)
- AAEC 5484: Applied Economic Forecasting (Spring 2)
- AAEC 5824: Advanced Applied Economic Analytics (Fall 2)

## Agricultural & Applied Economics Certificate

### Students who complete the certificate program will be able to:

- Assess the impact of micro- and macro-economic influences on business decisions
- Gain an understanding of how to manage agricultural production risks due to weather variability (microeconomics) and how to use Gross Domestic Product (GDP) forecasts and market analyses to determine future commodity prices (macroeconomics)
- Analyze economic trends to solve agricultural and resource problems such as the impact of inflation on food production costs and consumer spending

### Courses

- AAEC 5025: Applied Microeconomics (Fall 1)
- AAEC 5044: Applied Macroeconomics (Spring 2)
- AAEC 5084: Contemporary Issues and Responses in Food Systems (Fall 2)
- AAEC 5134: Agricultural Markets and Prices (Spring 1)

Certificates stack to online master's degree

All certificates appear on your transcript

Transferable credits don't apply to certificates

Admission requirements apply to certificate seekers

# Our certificates

## Contact:

Dixie Watts Dalton, Ph.D., Associate Professor of Practice, Director for the Center for Economic Education at Virginia Tech, and OMALS Agribusiness Concentration Coordinator. [dixie@vt.edu](mailto:dixie@vt.edu) | (540) 231-3727

## Agribusiness Fundamentals Certificate

### Students who complete the certificate program will be able to:

- Demonstrate management skills for effective interactions with coworkers or clients
- Develop a marketing plan for a product, service, or training
- Evaluate the impacts of micro- and macroeconomic conditions on the organization
- Analyze and interpret financial statements
- Estimate risk and cost of capital
- Apply risk management tools for strategic decision-making
- Assess the impacts of local, state, and federal policies on the organization's operations

### Courses

- AAEC 5034: Agribusiness Marketing Policy and Business Strategies (Summer)
- AAEC 5054: Strategic Agribusiness Management (Fall)
- AAEC 5074: Agricultural and Food Policy (Spring)
- AAEC 5424: Agribusiness Finance and Risk Management (Summer)

In addition to the completion of the Agribusiness Fundamentals Certificate, students can also earn another popular online degree from our college by completing the following online courses (Online Master of Agricultural and Life Sciences - Agribusiness (OMALS)).

>> <https://www.cals.vt.edu/academic-programs/online.html> (click on agribusiness)

- ALS 5024: Building Multicultural Competence in Agriculture and Life Sciences (1 credit) (Fall or Spring)
- ALS 5102: Communicating Research and Leadership in Agriculture and Life Sciences (2 credits) (Fall or Spring)
- ALS 5234: Advanced Concepts in Community Food Systems (Fall or Summer)
- ALS 5134: Community-Based Applications of Qualitative Inquiry (Fall or Spring)  
**or** ALS 5214: Information Systems and Research in Life Sciences (Spring, odd years)
- AAEC 5094: Project and Report (6 credits) (Final semester)
- Elective: any course from any concentration, including Agribusiness (3 credits)

Certificate stacks to online master's degree  
The certificate appears on your transcript  
Transferable credits don't apply to the certificate  
Admission requirements apply to certificate seekers