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ONLINE

# AGRONOMY E-LEARNING ACADEMY

## COURSES

- Agronomy Essentials
- Nutrient Management
- Precision Agriculture

## UPCOMING SESSIONS

- Jan 10th - Apr 3rd 2024
- Jun 5th - Aug 28th 2024
- Sept 11th - Dec 14th 2024

**COURSES DELIVERED 100%  
ONLINE FOR AGRICULTURE  
PROFESSIONALS.**

The business of growing crops has become increasingly complicated in recent years, as agriculture has been challenged with growing demands to increase production while minimizing the environmental impact. New technologies and a knowledge-based future will demand a more thorough understanding of the entire crop production system. We prepare agriculture professionals for the work of tomorrow in a flexible and convenient format.

Courses start every **January, June, and September.**  
If you complete all three courses, you will receive a *Crop Professional Certificate.*

67

CEUs AVAILABLE



LEARN MORE



# AGRONOMY ESSENTIALS

100% ONLINE  
12-WEEK COURSE  
25 CEUS\*

The Agronomy Essentials course follows the growing season, beginning with a study of soil and land, then proceeding through seed selection, planting, growth, development, nutrients, diagnostics, pest management, harvest, and storage. It is designed for students to complete one unit every two weeks, but students can work ahead as they choose. The course is open for 12 weeks and each unit requires approximately four to five hours of study. Once a student completes a unit and its test, the next unit opens.



*"GREAT EXPERIENCE OVERALL. COVERING THESE BASICS HAS BEEN EXTREMELY HELPFUL TO MY UNDERSTANDING OF THE FIELD AND MAKES ME FEEL BETTER INFORMED WHEN TALKING WITH CUSTOMERS AND EQUIPMENT DEALERS."*

## SYLLABUS

### UNIT 1: UNDERSTANDING THE LAND/FIELD PREPARATION

- Soil Texture and Structure, Biological, and Chemical Properties
- Water and Solute Movement in Soils, Irrigation, Drainage Methods
- Site Characterization, Legal Land Descriptions, Understanding Soil and Field Maps
- Tillage and Residue Management, Soil Restrictive Layers
- Soil Conservation, Water and Air Quality

### UNIT 3: CROP AND VARIETY SELECTION/PLANTING

- Crop Types and Cropping Systems, Crop Improvement
- Seed Selection and Characteristics of Corn, Soybeans and Wheat Crop Testing
- Planter and Drill Operation
- Corn, Soybean, Wheat and Forage Management Practices
- Precision Farming

### UNIT 5: CROP PROTECTION/PEST MANAGEMENT

- Weed Identification and Management Principles
- Insect Identification and Management Principles
- Disease Identification and Management Principles
- Pesticide Application and Stewardship

### UNIT 2: PLANT NUTRITION/SOIL FERTILITY

- Essential Elements, Plant Functions and The Nitrogen Cycle
- Soil and Plant Nutrient Assessment
- Fertilizers and Manures
- Fertilizer Application, Placement and Timing
- Fertilizer Additives and Soil Amendments

### UNIT 4: CROP GROWTH/DEVELOPMENT/DIAGNOSTICS

- Corn Growth and Development
- Soybean Growth and Development
- Small Grains and Forages Growth and Development
- Photosynthesis and Plant Growth, Cell and Leaf Anatomy
- Crop Diagnostics and Troubleshooting

### UNIT 6: HARVESTING AND MARKETING THE CROP

- Crop Harvest, Storage and Quality
- Marketing and Basic Economics

\*Certified Crop Advisers are eligible for CEUs





# NUTRIENT MANAGEMENT

100% ONLINE  
12-WEEK COURSE  
24 CEUS\*

Managing nutrients is one of the more complicated aspects of producing crops. Agricultural nutrient applications are associated with some of today's most concerning environmental issues, including impacts on water quality and contributions to greenhouse gasses. In addition, crop nutrient expenses are second only to land costs as an overall expense for farmers.

Professionals in many areas of agriculture depend upon understanding soil chemistry and how nutrient management can increase the health and bounty of crop production. Knowledge of nutrients and their management can allow individuals involved in better setting strategies and improving recommendations.

*"GREAT COURSE, ESPECIALLY  
WHEN COMBINED WITH  
AGRONOMY ESSENTIALS AND  
PRECISION AGRICULTURE -  
IT ALL TIES IN TOGETHER."*

66





# NUTRIENT MANAGEMENT

100% ONLINE  
12-WEEK COURSE  
24 CEUS\*

## SYLLABUS

### *MODULE 1: INTRODUCTION TO NUTRIENT MANAGEMENT*

Essential macronutrients and micronutrients, the 4R concept, adaptive management, nutrient management planning, regulations protecting air and water quality

### *MODULE 3: SOIL ORGANIC MATTER AND MICROBIOLOGY*

Role of microbes on nutrient uptake and availability, crop residue and soil organic matter management, use of cover crops

### *MODULE 5: PHOSPHORUS AND POTASSIUM IN THE SOIL*

Phosphorus and potassium forms and transformations, soil factors affecting availability to plants

### *MODULE 7: SOIL PH AND SOIL AMENDMENTS/ SALT AFFECTED*

Soil acidity, alkalinity, and salinity effects on crop production, active and reserve acidity, managing soil environments with soil amendments

### *MODULE 9: FERTILIZERS AND FERTILIZER ADDITIVES*

Fertilizer analyses, characteristics of fertilizer products, field characteristics that affect use, elemental vs. oxide, calculations, use of fertilizer additives

### *MODULE 11: NITROGEN APPLICATION TIMING AND PLACEMENT*

Crop response and environmental considerations regarding different Methods of nitrogen applications

### *MODULE 2: SOIL FERTILITY*

Nutrient sources, forms in the soil, cations and anions, factors affecting nutrient movement and availability, leaching, mineralization, nutrient interactions

### *MODULE 4: NITROGEN IN THE SOIL*

The nitrogen cycle including mineralization, nitrification, immobilization, denitrification and symbiotic fixation, factors affecting nitrogen transformations

### *MODULE 6: HARVESTING AND MARKETING THE CROP*

Forms and transformations of Calcium, Magnesium and Sulfur, and soil Factors affecting availability to plants

### *MODULE 8: NUTRIENT ASSESSMENT AND DIAGNOSTICS*

Soil and plant sampling techniques, site-specific sampling, lab tests for soil and plants, types and use of sensors, factors affecting lab and sensor results

### *MODULE 10: NITROGEN IN THE SOIL*

Sufficiency level, removal/replacement, and nutrient balance approach- es, P-based vs. N-based, how recommendations are derived, probab- ilities of response

### *MODULE 12: P AND K APPLICATION, TIMING AND PLACEMENT*

Crop response and environmental considerations regarding preplant, sidedress, and split applications of Phosphorus and Potassium

\*Certified Crop Advisers are eligible for CEUs





# PRECISION AGRICULTURE

100% ONLINE  
12-WEEK COURSE  
18 CEUS\*

The application of information technology to crop production has already transformed many aspects of crop production and promises even more. The Precision Agriculture course delves into the technology and techniques of site-specific farming. The course provides knowledge from which practitioners working in agriculture can better understand the science of site-specific farming to help themselves, their customers, and their companies. Each weekly module concludes with a video discussion involving farmers and retailers who are successfully using the technology in their profession.

*"DURING THE COURSE, I WAS ABLE TO SEE THE BIG PICTURE OF HOW FARMERS USE DATA TO MAKE DECISIONS, WHICH IS REALLY CRUCIAL IN AGRICULTURE TODAY."*





# PRECISION AGRICULTURE

100% ONLINE  
12-WEEK COURSE  
18 CEUS\*

## SYLLABUS

### *MODULE 1: INTRODUCTION TO PRECISION AGRICULTURE*

Scope and overview of the technologies and their applications

### *MODULE 3: DIFFERENTIAL CORRECTION*

Ground-based and space-based correction systems, levels of accuracy, manual guidance and auto guidance

### *MODULE 5: SOIL & WATER SPATIAL VARIABILITY*

Soil formation and change across landscapes, soil mapping technology and utility, precision land management, irrigation and drainage

### *MODULE 7: CROP SPATIAL VARIABILITY*

Yield monitors for grain and non-grain crops, calibration of monitors, data cleaning, yield map interpretation, yield stability, crop quality sensors

### *MODULE 9: AUTOMATION*

Implement steering, VRT seeding, planter unit controllers, variable hybrid/ variety planting, spray boom and nozzle controllers, boom leveling

### *MODULE 11: TELEMATICS*

Understanding telematics technology, wireless network applications, product comparisons

### *MODULE 2: GLOBAL POSITIONING SYSTEMS*

Global navigation systems used around the world, how they work, equipment, factors affecting accuracy

### *MODULE 4: SENSORS*

Satellite, aerial, UAV, and proximal sensing platforms; active vs. passive sensing; spectral, spatial and temporal resolution; soil, crop and weather sensors

### *MODULE 6: NUTRIENT SPATIAL VARIABILITY*

Grid and zone sampling approaches, developing management zones, nutrient-specific sensors, equipment for nutrient VRT

### *MODULE 8: GEOGRAPHIC INFORMATION SYSTEMS (GIS)*

GIS coordinate systems, map scales and standards, capture, storage, editing, analysis, display, image classification

### *MODULE 10: DATA ANALYSIS*

Experimental design, data quality, compatibility, privacy, interpretation and correlation, product comparisons

### *MODULE 12: PRECISION FARMING ECONOMICS AND ADOPTION*

Cost effectiveness of guidance systems, section controllers, site-specific management in various crops, regions, situations

# TAUGHT BY *WORLD-CLASS* SUBJECT MATTER *EXPERTS*



**BRUCE  
ERICKSON**

PHD, CPAG

DESIGNER AND INSTRUCTOR

*Dr. Bruce Erickson is Purdue University's Agronomy Education Distance and Outreach Director.* Dr. Erickson completed his undergraduate degree at Iowa State University in agronomy, then began his professional career as an agronomist with Pioneer/Corteva. After completing his Master's Degree at Iowa State University in crop production and physiology and his Doctoral Degree in agronomy at Purdue, Dr. Erickson joined the staff of the Purdue Department of Agronomy.

Dr. Erickson previously served as Senior Technical Designer at Agri-Business Group in Indianapolis. He was Director of Cropping Systems Management and Associate Director of the Center for Commercial Agriculture, where he worked extensively with precision farming and crop production economics research. Most recently, he was the Agronomic Education Manager for the American Society of Agronomy, where he was responsible for the International CCA performance objectives and development of the International CCA Exam, the India CCA Exam, and the Mexico CCA Exam.



**JAMES  
CAMBERATO**

PHD AGRONOMY  
PURDUE UNIVERSITY



**JOHN  
FULTON**

PHD FOOD, AGRICULTURAL AND  
BIOLOGICAL ENGINEERING  
OHIO STATE UNIVERSITY



**JOHN  
GRAVEEL**

PHD AGRONOMY  
PURDUE UNIVERSITY



**TERRY  
GRIFFIN**

PHD, CCA  
AGRICULTURAL ECONOMICS  
KANSAS STATE UNIVERSITY



**DEREK  
HEEREN**

PHD, PE  
BIOLOGICAL SYSTEMS ENGINEERING  
UNIVERSITY OF NEBRASKA



**KEITH  
JOHNSON**

PHD AGRONOMY  
PURDUE UNIVERSITY



**JOSH  
MCGRATH**

PHD PLANT AND SOIL SCIENCES  
UNIVERSITY OF KENTUCKY



**DAVE  
MENGEL**

PHD AGRONOMY  
KANSAS STATE UNIVERSITY



**PHILLIP  
OWENS**

PHD RESEARCH LEADER  
USDA



**DHARMENDRA  
SARASWAT**

PHD AGRICULTURAL AND  
BIOLOGICAL ENGINEERING  
PURDUE UNIVERSITY



**TIM  
STOMBAUGH**

PHD BIOSYSTEMS AND  
AGRICULTURAL ENGINEERING  
UNIVERSITY OF KENTUCKY



**BRYAN  
YOUNG**

PHD BOTANY & PLANT PATHOLOGY  
PURDUE UNIVERSITY



# AGRONOMY E-LEARNING ACADEMY



LEARN MORE

## DIGITAL BADGES

*Earn* a digital badge for each course you complete. Use the badge to set yourself apart and share your verifiable new skills on social platforms and add it to your LinkedIn page.



## CROP PROFESSIONAL CERTIFICATE

Complete all three of the online courses and you will receive a personalized, gold foil-embossed framed Crop Professional Certificate in addition to personalized certificates for each individual course.

## CONTACT US

For more information about Purdue's Agronomy e-Learning Academy, visit [purdue.biz/Agronomy](http://purdue.biz/Agronomy) or email us at [ellearn@purdue.edu](mailto:ellearn@purdue.edu).