



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Natural Sciences Business

COURSE: AGR 1206 Introduction to Precision Agriculture

Date: January 25, 2017

Credit Hours: 4 Credit Hours

Prerequisite(s): None

Delivery Method:

<input checked="" type="checkbox"/> Lecture	3 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
<input checked="" type="checkbox"/> Lab	2 Contact Hours (2-3 contact = 1 credit hour)
<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)
<input type="checkbox"/> Online	
<input type="checkbox"/> Blended	

Offered: **Fall** **Spring** **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>:

CATALOG DESCRIPTION:

This course is an introduction to the principles of precision agriculture as applied to modern farming techniques. This course provides an overview of precision farming concepts and the tools of precision farming (GPS, GIS, and VRT). Students will be engaged in hands-on laboratory activities to provide initial experience with the use of precision agriculture tools.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

Upon completion of the course, the student will be able:

[Choose up to three goals that will be formally assessed in this course.]

- To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- To communicate successfully, both orally and in writing, to a variety of audiences.
- To construct a critical awareness of and appreciate diversity.
- To understand and use technology effectively and to understand its impact on the individual and society.
- To develop interpersonal capacity.
- To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

Upon completion of the course, the student will be able to:

1. Students will explain the basic purpose and concept of precision agriculture.
2. Students will perform basic operations using various modern precision agriculture tools.
3. Students will collect data using precision agriculture tools.
4. Students will analyze and interpret precision agriculture data.
5. Students will make basic recommendations using various precision agriculture data and information.

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations.	<ol style="list-style-type: none"> 4. Students will analyze and interpret precision agriculture data. 5. Students will make basic recommendations using various precision agriculture data and information.
Second Goal	
To understand and use technology effectively and to	<ol style="list-style-type: none"> 1. Students will explain the basic purpose and concept of precision agriculture.

understand its impact on the individual and society.	<ol style="list-style-type: none"> 2. Students will perform basic operations using various modern precision agriculture tools. 3. Students will collect data using precision agriculture tools.
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COURSE TOPICS AND CONTENT REQUIREMENTS:

Lecture Topics:

- I. Introduction to Precision Agriculture
 - a. Definition
 - b. Main concepts of Precision
 - c. Various Farming Systems
 - d. Careers
- II. Mapping Concepts
 - a. Decision making in agriculture
 - b. Basic map components
- III. GPS Systems
 - a. History
 - b. Types and Characteristics
 - c. Use of receivers
- IV. Differential Correction and Data Transmission
 - a. Sources of Differential Correction
 - b. Advantages and Disadvantages
- V. GIS Data: Vector and Raster Information
 - a. Basic Components
 - b. Create Maps and Display GIS Information
 - c. Variable Rate Technology
 - d. Remote Sensing Equipment
- VI. IDI
 - a. Types
 - b. Uses and procedures
- VII. Data, Features, and Attributes
 - a. Collect data
 - b. Map and geo reference
- VIII. Farm Data Collection
 - a. Sources of data
 - b. Uses of collected data
 - c. Data storage
- IX. Spatial Analysis
 - a. Use of analysis
 - b. Data collection processes
- X. Yield Monitoring
 - a. Calibration

- b. Cleaning data sources
- XI. Interpolation
 - a. Interpretation of precision data
- XII. Product Application
 - a. Types of Precision Systems
- XIII. Financial Aspects
 - a. Costs of Precision
 - b. Benefits of Precision
- XIV. Exploring Future Technology

INSTRUCTIONAL METHODS:

- Lecture
- Guest Lecture
- Discussion
- Laboratory Activities

INSTRUCTIONAL MATERIALS:

Textbook:

Taylor, James. And Whelan, Brett. *Precision Agriculture for Grain Production Systems*. 2013. CSIRO Publishing. ISBN 9780643107472

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

Exams = 50%

Quizzes = 20%

Assignments = 15%

Lab Assignments = 15%

OTHER REFERENCES

www.iFarminc.com

www.farmworks.com

Course Competency/Assessment Methods Matrix

(Dept/# Course Name)	Assessment Options																																																			
For each competency/outcome place an "X" below the method of assessment to be used.	<table border="1"> <thead> <tr> <th data-bbox="520 180 569 654">Assessment of Student Learning</th> <td data-bbox="569 180 617 654">Article Review</td> <td data-bbox="617 180 665 654">Case Studies</td> <td data-bbox="665 180 714 654">Group Projects</td> <td data-bbox="714 180 762 654">Lab Work</td> <td data-bbox="762 180 810 654">Oral Presentations</td> <td data-bbox="810 180 858 654">Pre-Post Tests</td> <td data-bbox="858 180 907 654">Quizzes</td> <td data-bbox="907 180 955 654">Written Exams</td> <td data-bbox="955 180 1003 654">Artifact Self Reflection of Growth</td> <td data-bbox="1003 180 1052 654">Capstone Projects</td> <td data-bbox="1052 180 1100 654">Comprehensive Written Exit Exam</td> <td data-bbox="1100 180 1148 654">Course Embedded Questions</td> <td data-bbox="1148 180 1197 654">Multi-Media Projects</td> <td data-bbox="1197 180 1245 654">Observation</td> <td data-bbox="1245 180 1293 654">Writing Samples</td> <td data-bbox="1293 180 1341 654">Portfolio Evaluation</td> <td data-bbox="1341 180 1390 654">Real World Projects</td> <td data-bbox="1390 180 1438 654">Reflective Journals</td> <td data-bbox="1438 180 1486 654">Applied Application (skills) Test</td> <td data-bbox="1486 180 1535 654">Oral Exit Interviews</td> <td data-bbox="1535 180 1583 654">Accreditation Reviews/Reports</td> <td data-bbox="1583 180 1631 654">Advisory Council Feedback</td> <td data-bbox="1631 180 1680 654">Employer Surveys</td> <td data-bbox="1680 180 1728 654">Graduate Surveys</td> <td data-bbox="1728 180 1776 654">Internship/Practicum /Site Supervisor Evaluation</td> <td data-bbox="1776 180 1824 654">Licensing Exam</td> <td data-bbox="1824 180 1873 654">In Class Feedback</td> <td data-bbox="1873 180 1921 654">Simulation</td> <td data-bbox="1921 180 1969 654">Interview</td> <td data-bbox="1969 180 2018 654">Written Report</td> <td data-bbox="2018 180 2066 654">Assignment</td> </tr> </thead> </table>																				Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
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Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D																												
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