UAS 116 Precision Farming Technology

Course Master Syllabus

CATALOG DESCRIPTION: This course provides a comprehensive understanding of past, current, and future uncrewed and traditional technologies for agriculture applications. Students will be able to identify, understand, and utilize new and existing technology/software to assist in developing advanced precision farming and agricultural practices and standards. Fundamentals of entrepreneurship and finance will be covered for acquiring new systems, as well as how to price and value goods and services. Students will get real world experience using different sensors, aircraft, ground vehicles, and software to collect and interpret data. The course will concentrate on new technology and how to apply it to improve farm efficiency, to save money, resources, and time, as well as improving quantity of crop yield and accuracy of yield predictions.

PREREQUISITE(S):

COREQUISITE(S):

CREDITS: 3 **HOURS**: 3

REQUIRED TEXT(S):

SUPPLEMENTAL MATERIALS:

INSTRUCTOR INFORMATION:

OFFICE HOURS:

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CORE COMPETENCIES: The following core competencies are embedded in this curriculum: Communicate effectively in both speech and writing; Apply appropriate mathematical and statistical concepts and operations to interpret data to solve problems; Use scientific method of inquiry, through the acquisition of scientific knowledge; Use computer systems or other appropriate forms of technology to achieve educational and personal goals; Address an information need by locating, evaluating, and effectively using information.	
LEARNING ASSESSMENT	
Student Learning Outcomes:	***Suggested Means of Assessment:***
Develop an understanding of past agriculture technologies.	Research paper
Develop an understanding of existing agriculture technologies.	Research paper
Demonstrate the ability to utilize current software like Pix4D Fields to compile and analyze data.	Practical exercise
Demonstrate the ability to gather soil samples and analyze them using basic on-site tools, as well as advanced lab tests.	Practical exercise
Develop an understanding of how to utilize herd management systems and manage a herd of cattle.	Practical exercise
Develop the skills to use air and ground uncrewed vehicles to manage crops.	Practical exercise
Choose a precision agriculture system to "purchase" for your farm or business and demonstrate its uses.	Presentation
GRADING SYSTEM:	C+ = 77 < 80
A = 90 < 100	C = 70 < 77
B+ = 87 < 90	D = 60< 70
B = 80 < 87	F = Below 60

DISABILITY SERVICES STATEMENT: Warren County Community College is committed to providing all students equal access to learning opportunities. Student Services is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations. Students who have, or think they may have, a disability (e.g. mental health, learning, vision, hearing, physical or systemic), are invited to contact Student Services to arrange a confidential discussion at (908) 835-2300 or by email at StudentServices@warren.edu as soon as possible. Students registered for Disability Services with Student Services, who have requested accommodations for the current semester will be provided with an electronic letter detailing individual accommodations and are encouraged to contact the instructor early in the semester to discuss accommodations outlined in their letter.

INSTRUCTIONAL SUPPORT CENTER: The Instructional Support Center (ISC), located in Room 105 across from the library, provides academic support at no cost to WCCC students and is available for courses in which they are currently enrolled. The ISC is staffed with trained professional and peer tutors who are ready to help you understand and succeed. For scheduling or further information, visit the ISC in person, online at http://www.warren.edu/tutoring/ or by telephone at (908)835-2354.

STATEMENT AND POLICY ON CHEATING, PLAGIARISM AND ACADEMIC DISHONESTY: Students are required to perform all the work specified by the instructor and are responsible for the content and integrity of all academic work submitted. A violation of academic integrity will occur if a student: (1) knowingly represents work of others as one's own, (2) uses or obtains unauthorized assistance in any academic work, (3) gives fraudulent assistance to another student, or (4) furnishes false information or other misuse of college documents.

In cases of suspected violation of academic integrity, the incident is to be reported to the Office of Academics. A student found guilty of violating the rule of academic integrity by the Vice President of Academics will be considered to have failed in personal obligation to the College; such failure will be subject to disciplinary action by the College. Unless otherwise notified, the instructor will allow students who are pending disciplinary action to attend class.

REQUIRED FORMAT FOR RESEARCH PAPERS: Research papers written for any Warren County Community College class must conform to the required documentation style. Papers written for humanities (and some social science) classes will follow the most recent edition of the Modern Language Association (MLA) in-text citation and bibliographic methods. Social science and science papers will require the use of the most recent edition of the American Psychological Association (APA) in-text citation and bibliographic methods.

Please consult with your instructor regarding the correct documentation style to use in his/her class.

ATTENDANCE POLICY: Students are expected to attend all class sessions of courses in which they are enrolled and are responsible for all material presented in class and all homework assignments.

Grades are based on the quality of work completed in meeting the requirements for a particular course, as stated in the course syllabus and catalog description.

Excessive absence may be considered sufficient cause for dismissal from class by an instructor or other appropriate college staff member. Any decision to exclude a student from class or the College due to excessive absence shall be subject to review by the President in accordance with established procedures. Students who have not attended class are not entitled to a refund of tuition.

WCCC HAYTAIAN & MAIER LIBRARY

Text: 908-652-4445 Email: lstoll@warren.edu

http://warren.libguides.com

Please see the library's website above for current semester hours.

The WCCC Library offers a wide range of services to students specific to the information literacy goals of the College which includes suggesting research strategies, facilitating the use of both digital and print resources, as well as assisting students with citations to avoid plagiarism.

The library also serves as the College's computer space, with computers for students to use when the library is open. Students also have free, unlimited printing from the College's computers, as well as space to study.

The library is where students can get their college student ID cards. All students are required to get a student ID card and carry it while on campus for security purposes. To get a student ID card, you must bring another form of ID to the library. You may also be asked to bring a printed copy of your current class schedule. You can get a student ID card any time that the library is open. These cards do not expire and can be used for your duration at WCCC.

Additionally, the library participates in a national inter-library loan program which is available free to all students and faculty. You can submit ILL requests by emailing the librarian or by stopping by the library's circulation desk.

TOPICAL OUTLINE:

1. History of agriculture technology
2. Modern agriculture technologies
3. Software and data in agriculture
4. Soil and its nutrients
   a. Soil tests
   b. Soil monitoring systems
   c. Relevant nutrients
   d. Data collection practices
5. Herd management
   a. Cow fertility
   b. Cow health
   c. Cow nutrition
6. Farm economics
   a. Calculating yield
   b. Calculating cost
   c. Calculating loss
7. Payloads for UAS and ground robotics

a. RGB and multispectral imaging
8. Multirotor UAS for agriculture
9. Fixed wing and VTOL UAS
10. Licenses and waivers
    a. FAA licenses
    b. FAA exemptions
    c. Commercial pesticide applicator

GRADING METHODS:

ITINERARY: