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Agricultural Decision Systems
ABE 6644
Academic Term: Spring 2025

Class Periods: Monday, Wednesday, Friday: 4th period (10:40 AM - 11:30 AM)
Location: Online
Zoom Meeting ID: 934 6527 7232

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Instructor:

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Office Hours: by appointment

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Office hours: Thursday 9:00 AM to 12:00 PM or by arrangement

Course Description

Decision Support Systems are programs or tools to organize and synthesize information to support management decision making. They are commonly used to assist with managing agricultural systems, to help solve natural resource management issues, or to assist in policy advising. As such, they are sometimes closely related to or applied within agricultural extension and farmer education and can be both computerized and human powered. They are also commonly used by the private sector to provide information to producers and other stakeholders. With the advancement of remote sensing, machine learning, AI, Big Data, Digital Twins, and the Internet of Things, decision support systems are providing new and challenging opportunities to provide timely and accurate information to a broad range of clients and stakeholders.

ABE6644 will provide a broad introduction into the foundation and methodology of the design, development, and evaluation of decision support systems. Going beyond the actual coding of simple decision support systems, this course will cover the complete decision-making process from identifying issues/needs, to developing and disseminating appropriate tools or solutions. Students will develop a conceptual prototype of a Decision Support System to address a problem in their discipline. Guest speakers will share insights from real-world applications.

It is important to note that ABE6644 is not a programming/coding/data analytics course. The course will provide the concepts and methodology of decision support systems, but not "hard" technical skills. We will reference to other courses for those aspects if needed. This course will focus on examples in the agriculture and natural resource management domain but should be

broadly applicable to other fields. Students with diverse backgrounds are encouraged to join and the content and projects can be customized accordingly.

You will like and benefit from this course if you want to:
1) learn how to transform theoretical and practical research projects into more actionable tools with "a user in mind" and
2) to address real-world challenges and develop tools and systems for science and information dissemination to stakeholders

Course Pre-Requisites / Co-Requisites
This course is aimed at graduate students from any discipline, and no specific course pre-requisites are required. Many examples in the course will be focused on agricultural and environmental issues and natural resource management. A general understanding of biological processes and the (agricultural) ecosystem is beneficial but no in-depth knowledge required. Students are required to develop individual course projects based on their personal interest or area of study, which can be outside of the agricultural or environmental domain. The student needs to be able to independently source additional materials for their specific topic through general literature review techniques. Please contact the instructor if you have questions or interest in a specific subject area.

Course Objectives
General objectives of the course are for the students to become:
- knowledgeable about the Decision Support System process and application cases in agriculture, environment, and other related fields
- able to analyze and evaluate existing Decision Support System regarding their problem background, functioning and potential impact
- skilled in developing their own Decision Support System framework and theoretical prototype to address a specific problem setting

Course Assignments and Projects
The main deliverables for this course are class assignments (1) and a final project (2):

1) Brief reports or reviews of existing Decision Support Systems for various criteria such as design, audience and impact using the techniques and methods so far presented in the course. The student will introduce the Decision Support System via a brief discussion of the reference, e.g., journal article or popular press news, followed by his own analysis of the system and guided discussion with other class participants.

2) Conceptual design of a new Decision Support System based on a practical challenge within the respective field of interest. The design progress will be continuously documented and submitted via two progress reports throughout the semester. Feedback will be provided to guide the further design process up to the final project report and oral presentation.

Materials and Supply Fees
Not applicable

Required Textbooks and Software
No textbook is required as readings will be based on developed course notes and journal articles. Software requirements are limited to a standard office package to create a written report and project presentation, such as Microsoft Office (Word, PowerPoint) or Libre Office (Writer, Impress).

Recommended Materials
A list of up-to-date readings and materials is provided via the Canvas course platform. All materials are available free of charge to enrolled students but may require connection to the *eduroam* network (VPN) for full access. Students are required to source additional materials depending on their specific field of interest.

Course Schedule

Each week consists of 3 sessions for 50 minutes each. The 1st and 2nd sessions of each week will focus on the lecture and new content, whereas the 3rd session is reserved for guest lectures, questions, presentations, project work, and follow up as needed. We aim to provide the course in a on-line format only so that students who are located at Research and Education Centers can easily participate. Optional recordings will be available for asynchronous viewing pending participants consent to be recorded. The guest speaker will also join remotely.

Tentative Schedule

Week / Date	Topic	Content
1 01/13	General Course Introduction	Introduction to Decision Support Systems General Course Content and Student Expectations
2 01/20	Problem Setting Decision Support Systems in Practice (1)	Problems in Agricultural and Natural Resource Management Guest Speaker 1
3 01/27	Theory Introduction	Theory of Decision-Making Process and Knowledge Management Guest Speaker 2
4 02/03	Decision Support Systems in Practice (2)	Practical Applications of Decision Support Systems Guest Speaker 3
5 02/10	Development	Development Process of Decision Support Systems Guest Speaker 4
6 02/17	Techniques	Techniques for Decision Support Systems Guest Speaker 5
7 02/24	Decision Support Systems in Practice (3) Course Feedback	Mid-Semester Course Feedback from Students Guest Speaker 6
8 03/03	Design and Delivery	Design and Delivery of Decision Support Systems Guest Speaker 7
9 03/10	Adoption, Evaluation, and Impact	Evaluation of Decision Support Systems
10 03/17	Spring Break	
11 03/24	Decision Support Systems in Practice (4)	
12 03/31	Decision Support Systems in Practice (5)	

13 04/07	Final Project	Final Project Presentations
14 04/14	Final Project	Final Project Presentations
15 04/21	Final Project	
16 04/28	Finals Week	Final Project Submission

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance during lectures is not required but strongly encouraged for success in this course. Students are required to make-up for missed classes through exchange with classmates or meeting with the teaching assistant. Classes will be recorded and shared through the eLearning platform if feasible and requested by the students. There are no penalties for absence or tardiness. There is also no specific cell phone / laptop policy. Missed assignments will be graded as failed if no extenuating circumstances are present. If the extenuating circumstances are present, we will work with the student to arrange alternative deadlines for course submissions. The submission of a satisfactory final project report and oral presentation is obligatory to pass this course.

Excused absences must be consistent with university policies in the Graduate Catalog and require appropriate documentation. Additional information can be found in Attendance Policies.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Class Projects	40	40%
1st Project progress report	5	5%
2nd Project progress report	5	5%
Final Project Report	30	30%
Final Project Presentation	20	20%
	100	100%

Grading Policy

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 – 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 – 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
UF Graduate Catalog
Grades and Grading Policies

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students on the Gator Evals page.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the Notification to Students of FERPA Rights.

Campus Resources:

Health and Wellness

> **U Matter, We Care:**
> If you or a friend is in distress, please contact umatter@ufl.edu or 352-294-2273 so that a team member can reach out to the student.
>
> **Counseling and Wellness Center:** counseling.ufl.edu/cwc, and 352-392-1575; and the University Police Department: 352-392-1111 or 9-1-1 for emergencies.
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> **Sexual Assault Recovery Services (SARS)**
> Student Health Care Center, 325-392-1161.
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> **University Police Department** at 352-392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

> **E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
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> **Career Resource Center**, Reitz Union, 352-392-1601. Career assistance and counseling.
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> **Library Support**, Various ways to receive assistance with respect to using the libraries or finding resources.
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> **Teaching Center**, 1317 Turlington Hall, 352-392-2010 or 392-6420. General study skills and tutoring.
>
> **Writing Studio,** 2215 Turlington Hall, 325-846-1138. Help brainstorming, formatting, and writing papers.
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> **Student Complaints Campus**
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> **On-Line Students Complaints**