Course Name: Irrigation System Design
Course Number: BEE 433 / BEE 533
Course Credits: 4
Prerequisies/Corequisites: Requires BEE312 or CE313 (for BEE433)
Instructor name: Stephen Good
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Teaching Assistant name and contact info: NA

Course Description
Principles of soil physics and plant water use applied to irrigation system design. Design of different irrigation systems, improving on-farm water management, performance characteristics of pumps and other irrigation equipment.

Student Learning Outcomes
It is expected that at the conclusion of this course students will have attained the following outcomes:

1) Identify appropriate irrigation solutions for agricultural applications.
2) Evaluate the meteorological, biological, and economic effects of different irrigation approaches.
3) Design irrigation systems that provide target irrigation levels and crop yields.
4) Appraise the costs and benefits of contrasting irrigation designs (students in BEE533 only)

Evaluation of Student Performance
Students will be assessed through quizzes, assignments, and a final design report. There will be a total of 8 quizzes which consist of 5 questions each worth 2 points (80 points total). There will be a total of 4 homework assignments which will consist of 4 questions, each worth 10 points (160 points total). For each homework question, the problem, method, and solution must be clearly stated. All homework will be submitted online to Canvas as PDF files, and each problem will be scored according to the following rubric: 10pts (no errors); 9pts (minor errors); 8pts (moderate errors); 7pts (major errors); 6pts (beginning level). For quizzes and homework as, students are permitted to resubmit their work with proper corrections demonstrating understanding of the correct answers to receive ½ of their lost points back (email to these to the instructor within a week of the assigned due-date). There will be a final design report due the Monday of finals week (60 points). Finally, participation in course discussions throughout the term will be worth 100 points total.

Grades will be assigned as follows:

Percentage	Grade	Percentage	Grade
93 - 100	A	73 – 77	C
90 – 93	A -	70 – 73	C-
87 – 90	B+	67 – 70	D+
83 – 87	B	63 – 67	D
80 – 83	B-	60 – 63	D-
77 – 80	C+	0 – 60	F

Course Content

This course is divided into 10 Weeks/Modules, each with their own reading and learning activities

Wk	Topic	Reading Materials	Learning Activities Due
1	Introduction & Overview		
2	Irrigation Economics	NRCS Part 652 – Chapter 11 Sections: 652.1100-652.1104	Quiz 1
3	Crop Water Requirements	NRCS Part 623 – Chapter 2 Sections: 623.0200-623.0204	Quiz 2
4	Soil Water	NRCS Part 652 - Irrigation Guide Sections: 652.0200-652.0202	Quiz 3 HW #1 Due
5	Surface Irrigation	NRCS Part 623 – Chapter 4 Sections: 623.0401-623.0402	Quiz 4
6	Sprinkler Systems	NRCS Part 623 – Chapter 11 Sections: 623.1100-623.1105	Quiz 5 HW #2 Due
7	Micro-irrigation System	NRCS Part 623 – Chapter 7 Sections: 623.0700-623.0705 + 623.0711	Quiz 6
8	Pipelines and Pumps	NRCS Part 623 – Chapter 8 Sections: 623.0801-623.0808	Quiz 7 HW #3 Due
9	Drainage	NRCS Part 650 – Chapter 14 Sections: 650.14-650.1428	Quiz 8
10	Conclusion & wrap up		HW #4 Due
11			Final Design Report

Learning Resources

No textbook is required for this course. Readings are primarily based on the USDA Natural Resources Conservations Service (NRCS) Engineering Handbook Part 623, Part 650, and Part 652 as well as the and the Food and Agriculture Organization (FAO) Technical Papers #33 and #56. These can be found on the NRCS website: https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/irrigation under “Handbooks and Manuals”.

Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Expectations for Student Conduct Link

https://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/code_of_student_conduct_final.pdf

Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it’s important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)