AGTC 219: IRRIGATION SYSTEM DESIGN

Proposer:

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Effective Term:
Spring 2020

Credit Status:
Credit - Degree Applicable

Subject:
AGTC - Agricultural Technology

Course Number:
219

Catalog Title
Irrigation System Design

Catalog Description
Irrigation system design fundamentals covering micro, sprinkler, surface, and sub-surface applications. Topics include on-farm systems, piping, and discharge as well as system efficiency and cost. AutoCAD and other common design software will be introduced and utilized.

Method of Instruction:
Laboratory
Lecture and/or Discussion

Course Units/Hours:

Course Units Minimum:
3

Lecture Hours Minimum (week)
3

Lab Hours Minimum (week)
1

Total Contact Hours Minimum (semester)
70

Total Outside Hours Minimum (semester)
105

Total Student Learning Minimum Hours (semester)
175

Repeatability:
No

Open Entry/Exit:
No

Field Trips:
Not Required

Grade Mode:
Standard Letter

TOP Code:
011600 - * Agricultural Power Equipment Technology

SAM Code:
C - Clearly Occupational

Course Content

Methods of Assessment:
Problem solving assignments or activities
Project
Short answer quizzes or exams
Skill demonstrations

Course Topics:

	Course Topics
1	Introduction to AutoCAD
2	Introduction to IrriCAD
3	Irrigation and water hydraulics calculations
4	Water Source
5	Field and Crop evaluation
6	System Design
7	Miscellaneous Equipment
8	Surface Irrigation
9	Micro Irrigation
10	Sprinkler Irrigation
11	Subsurface Irrigation

Course Objectives:

	Course Objectives
1	Analyze a given situation and determine crop water needs, soil type, plot area, elevation changes and current water source.
2	Use AutoCAD to complete a set of working drawings of a proposed irrigation system.
3	Calculate required system flow, pressure, water velocity and friction loss.
4	Identify various irrigation system components and the materials used in their construction.
5	Specify irrigation components in order to deliver the required water in a cost effective manner.
6	Specify the appropriate irrigation filter for a specific water source and water quality.
7	Develop a complete cost estimate for system material.
8	Specify appropriate piping material and size in order to minimize friction loss.

Course Outcomes:

	Course Outcomes
1	Given a crop and field scenario students will be able to design an irrigation system to meet the water needs of the specific crop.
2	Students will be able to select the correct components for the system based on system type, water requirement, and system type.
3	Students will be able to size mainlines and laterals appropriately.

Assignments:

Assignment Type:	Details
Reading	Students may have to read evapo-transpiration reports in order to determine maximum annual evapo-transpiration.
Lab	Students will have to design an irrigation system given a crop and a field scenario.
Writing	Students will have to write a project proposal presenting their irrigation system design.
Homework	Students may have to go research irrigation systems near their home to familiarize themselves with other designs.

Textbooks or other support materials

Resource Type:	Details
Books	Drip and Micro Irrigation Design and Management Fifth Edition. Styles and Burt (2016) ISBN 978-0-692-63479-0

Other Degree Attributes

Not Transferable
Degree Applicable
Not a Basic Skills Course

Banner Title:

Irrigation System Design

Curriculum Committee Approval Date:

10/02/2019

Academic Senate Approval Date:

10/09/2019

District Governing Board Approval Date:

10/14/2019

Course Control Number:

CCC000608572