Spring 2014 – Course Syllabus

Course number and title: CIVE 512 - Irrigation Systems Design
Credits: 3

Course Description: Irrigation systems principles and design procedures for design and operation of sprinkler, trickle, and surface irrigation systems.

Prerequisite: CIVE 425 – Soil and Water Engineering or CIVE 322/ENVE 322 - Basic Hydrology. Other related classes may be considered.

Instructor: Dr. José L. Chávez
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Office Hours: Tuesdays and Thursdays 2:30-3:30 pm, in Engineering room B-210

Course Time/Place: 9:30am – 10:45am Tuesdays and Thursdays
Room B2, Engineering Building

Text: 1. Hoffman, G.J., R.G. Evans, M.E. Jensen, D.L. Martin, and R.L. Elliott. (2007). **Design and Operation of Farm Irrigation Systems**. 2nd Ed., ASABE, St. Joseph, MI, 1040 pp. ISBN: 1-892769-64-6.

2. Class Handouts and directed readings.

Course Objective: To provide an understanding of basic engineering principles and procedures which are necessary for the successful selection, design and operation of pressurized and surface (free flow) irrigation systems.

Outcomes: On completion of the course, the student will understand and be able to:

1. Select a suitable irrigation system for a given situation.
2. Assess the performance of irrigation systems.
3. Complete the basic design of irrigation systems: sprinkler, trickle, and surface.
4. Conceptualize the basis of a precision irrigation system.

Course Topics/Weekly Schedule:

Week 1: Overview of irrigation and soil-water-plant relationships.
Week 2: Irrigation water requirements and system capacity.
Week 3: Types of irrigation systems and their selection criteria.
Week 4: Performance criteria of irrigation systems.
Week 5: Principles of pressurized irrigation systems.
Week 6: Sprinkler irrigation design of fixed and hand move systems.
Week 7: Sprinkler irrigation design of fixed and hand move systems.
Week 8: Pumps and system curves (design of pumping units).

Week 9: Design of self move (Pivot & Lateral) sprinkler irrigation systems.
Week 10: Trickle irrigation design and operation.
Week 11: Precision Irrigation concepts and application .
Week 12: Surface irrigation systems – design principles.
Week 13: Design of surface irrigation systems (e.g., basin, border, furrow).
Week 14: Irrigation systems drainage considerations.
Week 15: Summary and reviews.

Final Exam: May 12, 2:00 – 4:00 p.m. Verify the date and time at:
http://www.registrar.colostate.edu/spring-final-exam-schedule

Instructional Methodology: The class will meet two days a week (Tuesdays and Thursdays) for lectures and discussion.

Mode of Delivery: Classroom instruction.

Methods of Evaluation: Students will be evaluated on the basis of examinations and homework. There will be two mid-term exams and a final exam. The course grade will be determined based upon the following percentages:

- *Midterm Exams (2)* = *40% (20% each)*
- *Final Exam* = *30%*
- *Homework* = *30%*

Total =100%

Term grades for this course will use the +/- grading system as described in the CSU catalog. The following scale will be used: A ≥ 93; A- ≥ 90; B+ ≥ 87; B ≥ 83; B- ≥ 80; C+ ≥ 77; C ≥ 70; D ≥ 60; F < 60.

Policies: Late assignment submission will not be accepted without prior arrangement with the instructor. When arranged, a penalty of 20% per day late submission will be assessed on these assignments. Make-up exams will be given only for university-approved excuses or when you have a note from a medical professional. No cell phones on in the classroom. Please keep your email correspondence written in a professional style. Students are encouraged to discuss and collaborate, however, the final work you submit should be distinctly your own. CSU policies on academic integrity will be rigorously enforced in this course. For Please refer to:

http://www.catalog.colostate.edu/Content/files/2011/FrontPDF/1.6POLICIES.pdf
http://learning.colostate.edu/integrity/index.cfm