

Fall 2014 - Course Syllabus

Course number and title: CIVE 519 - Irrigation Water Management

Credits: 3

Course Description:

This course prepares the student to apply basic soil, plant, water, and atmospheric engineering principles for the purpose of determining the crop water need (use), or evapotranspiration (ET), both in time and amounts, to sustain agricultural production while protecting the environment. The course covers a range of methods and instrumentation available to determine ET (crop water requirements), irrigation scheduling, and effective water use, including remote sensing of ET.

Prerequisite: CIVE 425 – Soil and Water Engineering, a hydrology class, or other related classes may be considered.

Instructors: José L. Chávez, Ph.D.
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Email: jose.chavez@colostate.edu

Office Hours: M-W-F, 3-4 pm, or by appointment.

Alternatively both resident and distance (Online Plus) students are welcome to post questions in the Discussions section, under Course Questions, in CANVAS and/or send emails to me and/or to the course Instructional Assistant (Graduate student Emily Kullberg: kullberg@rams.colostate.edu)

Course Time/Place:

3:30 pm – 4:45 pm Tuesdays and Thursdays in Room B4, Engineering Building

- Text(s):** 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. (**Digital version available**).
2. Class Handouts and directed readings (RamCT Blackboard).

Course objectives and outcomes: The student successfully completing this course will be able to:

1. Determine the required data, apply adequate methods and find efficient solutions in regards to soil water and land surface energy balances, crop water (ET) needs/use, and irrigation systems efficiency evaluation.
2. Select particular methods and instrumentation to properly design an irrigation scheduling mechanism based on specific field, crop, and environmental conditions.

Course Topics (Approximate number of lectures per topic):

1. Irrigation relevance for agricultural production (1)
2. Irrigation management concepts and system elements (1)
3. Irrigation planning and data needs (1)
4. Irrigation hydrologic balance (0.5)
5. Basic soil water physics (0.5)
6. Measuring soil water content (4)
7. Principles of crop water use or evapotranspiration (ET) (2)
8. ET measurements (instrumentation), direct & indirect methods (5)
9. Crop evapotranspiration estimation (models) (2)
10. Irrigation scheduling (2)
11. Spatially distributed crop evapotranspiration estimation (remote sensing-based algorithms) (6)
12. Irrigation efficiency (2)
13. Material review and exams (4)

Final Exam: December 17th, 6:20 to 8:20 p.m. (in room B4)

Instructional Methodology: The class will meet two days a week (Tuesdays and Thursdays, 3:30 – 4:45 p.m.) for lectures and discussion. Classes will be recorded (ECHO 360 system) and will be available through CANVAS (pilot program).

Mode of Delivery: Classroom instruction and CANVAS (pilot).

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:

➤ <i>Midterm Exams (2)</i>	= 35% (17.5% each)
➤ <i>Final Exam</i>	= 25%
➤ <i>Homework</i>	= 40%

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+ ≥ 97; A ≥ 93; A- ≥ 90; B+ ≥ 87; B ≥ 83; B- ≥ 80; C+ ≥ 77; C ≥ 70; D ≥ 60; F < 60.

Policies: I will accept late homework submissions up to five days after the due date or before solutions are distributed, whichever comes first. A penalty of 20% per day late 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. 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. Please refer to:

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

For OnlinePlus students (Exam Proctoring instructions):

Options for exam proctoring: In accordance with Colorado State University OnlinePlus proctoring guidelines, students have two options for having paper-based exams proctored for this course. Both options require you to submit a Proctor Identification Form found at <http://www.online.colostate.edu/proctoring/> at least two weeks prior to the first exam.

Proctoring Options:

1. Take the exam at an OnlinePlus facility in Fort Collins or Denver, or at the University Testing Center (UTC) on-campus. Schedule an appointment at least three days before you need to take your exam. OnlinePlus offices do not charge for proctoring services. Contact OnlinePlus at 970-492-4704 (Fort Collins) or 303-573-6318 (Denver) or the UTC at (970) 491-6498 for more information.
2. Work with an eligible proctor outside of Colorado State University. Your proctor selection is subject to approval. Any costs incurred due to using an outside proctor is your responsibility. Please review the eligibility guidelines found on the OnlinePlus website when selecting an outside proctor.

Visit the OnlinePlus website at

<http://www.online.colostate.edu/answers/services/proctoring.dot> for more information about your proctoring options and eligible proctors.

It is your responsibility to select an eligible proctor, schedule exams with your proctor, and abide by all rules for bringing only appropriate materials into the testing area. Mobile or other electronic devices are strictly prohibited. You will need to provide photo identification to your proctor prior to taking any exam. Appropriate identification includes: driver's license, CSU Student ID, passport, or other government issued photo identification.

If you have any questions or concerns about your responsibilities, you may contact OnlinePlus at onlineplus_proctoring@colostate.edu.