Course number and title: CIVE 519 Irrigation Water Management
Credits: 3
Term(s) to be offered: Every Fall

Prerequisite(s): CIVE 425 or a Hydrology course with soil-water relationships content or closely related course. Soil-water relations and environmental variables background.

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), 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 crop water use or evapotranspiration (water requirements), irrigation scheduling, and effective water use.

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2. Class Handouts and directed readings (RamCT Blackboard).

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

1. Build on fundamental soil, plant, water, and atmospheric engineering principles.
2. Determine the required data, apply adequate methods and find efficient solutions in regards to soil water and land surface energy balances, crop water needs, and irrigation systems evaluation.
3. Select particular methods and instrumentation to properly design an irrigation scheduling mechanism based on specific field conditions.
4. Use spreadsheets (EXCEL™) to process instrumentation field data, perform calculations, and produce graphs.

Course Topics:
1. Irrigation relevance for agricultural production.
2. Irrigation system elements.
3. Irrigation planning and data needs.
4. Irrigation hydrologic balance.
5. Basic soil water physics.
7. Principles of crop water use or evapotranspiration.
8. Potential and actual evapotranspiration.
9. ET measurements (instrumentation), direct & indirect methods.
10. Crop evapotranspiration estimation (models).
11. Irrigation scheduling.
12. Spatially distributed crop ET estimation (remote sensing-based algorithms).