

# **CIVE 898: Independent Study - Remote Sensing Tools in Civil Engineering**

Fall Semester 2017

University of Nebraska-Lincoln

- Prerequisites:** By special permission from instructor only. A permission code to enroll will be available upon the mutual agreement of both parties.
- Description:** An introduction to effective planning and deployment of remote sensing platforms for civil systems. To develop preliminary knowledge and real-world experience, hands on research will be conducted associated with some of the following tasks:
1. Remote sensing data acquisition methodologies associated with student selected sites of interest.
  2. Processing of collected remote sensing data of various civil systems, which may, but is not limited to, bridges, buildings, levees, streams, geotechnical slopes, and roads.
  3. Data mining of collected remote sensing data using robust computational platforms for key features of interest (e.g. MATLAB, ArcGIS, Bentley Inroads, CloudCompare, etc.). Key features of interest may include, but are not limited to, dimensions, takeoff quantities, classifications, etc.
- Learning Objectives:** This course will enable student(s) to:
1. Develop skills in data acquisition planning and best practices for field assessments of realistic environments.
  2. Develop skills in optimal data mining as related to remote sensing technologies.
  3. Present effective remote sensing methodologies to supplement other civil engineering techniques.
- Student Outcomes:** This course will enable students and prospective graduates to minimally achieve the following educational outcomes (defined within ABET 2014):
- (a) An ability to apply knowledge of mathematics, science, and engineering.
  - (e) An ability to identify, formulate, and solve engineering problems.
  - (f) An understanding of professional and ethical responsibility.
  - (g) An ability to communicate effectively.
  - (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- Instructor:** Richard L. Wood (rwood@unl.edu)  
362K Whittier Research Facility, office: (402) 472-1916
- Office Hours:** Available by appointment only.
- Grading Policy:** At the conclusion of the semester, either a written report of minimum six (6) pages and/or a forty (40) minute presentation is required that summarizes the

work performed. The presentation would minimally be to the instructor and the internal/external collaborators, however other students and faculty members may be invited.

Grading is assigned as **pass or fail only**, where no letter grades will be assigned. **One credit hour** is appropriate for this workload.

I have reviewed the syllabus and the outlined expectations for this course. My signature below demonstrates that I have been presented these details and I agree to the terms above.

**Student Name (print):** \_\_\_\_\_

**Student Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Instructor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_