SYLLABUS FALL 2017
CE 538 INFORMATION TECHNOLOGY AND MODELING

Professor: Dr. William Rasdorf
Mann Hall Room 200
515-7637*
rasdorf@eos.ncsu.edu

Office Hours: Generally M/W 2:00 p.m. - 5:00 p.m.
And By Appointment
Please call or email to set up a meeting.

Course Meeting: M/W 5:00pm to 6:15pm
Mann Hall Room 406

Course Materials: Handouts to be distributed in class or available via Google Drive online.

Communications: Complete name/phone list of students and professor.

Course Grading: Assignments 100% of grade

Last Week of Class: Assignments (reports) will be required during last week of class. Participation in any such assignment is mandatory. Quizzes are also expected to be given during the last week of class.

Letter Grades: University plus and minus grading system to be used.

Attendance: Attendance is mandatory and it will be periodically checked.

Video Recordings: This on campus course will be captured and distributed via the Internet and/or electronic media as part of the Engineering Online (EOL) program for the distance students. These video recordings may contain an image of you entering the classroom, asking a question or being a part of the studio class. Please notify Dr. Linda Krute, Director of EOL, in writing at ldkrute@ncsu.edu if you DO NOT want your image to be included in the lecture presentation. If we do not hear from you after the first week of the class, we will assume that you are in agreement with this procedure.

Assignments: Periodic assignments (usually weekly) will be made during the course. Assignments are expected to be completed in a timely and professional manner following a set of high quality writing standards. We will have something on the order of 10 assignments. Of these 4 will be grades on a 100 point scale. The remaining assignments will simply be checked for completeness and assigned a score on a 20 point scale. The fully graded assignments will NOT be announced ahead of time. You are expected to do a complete and thorough job on all assignments. Late assignments are accepted only if justified and approved by the professor.

Reports and Presentations: These are expected to be of the highest professional quality. Cover pages, tables of contents, appropriate organization, introduction, methodology (what you did), results (findings, what you found), conclusions (what the results mean or what was learned), and recommendations (what to do next), etc. are expected. Professional reports are required to attain the highest possible assignment grade.
**Teams:** 2 or 3 person teams for most assignments.

**Time Sheet**
Full participation in team work is essential. A time sheet (for every assignment and each team) should be submitted with the report (staple it in the back of the report). The purpose of the timesheet is to document joint meeting times, assignment duration, and accomplishments as well as individual work duration and activities. That is, you are to document who did what for every assignment. All participants are expected to agree on their % contribution. Under no circumstances should I see an assignment time reporting of 1/3 for each of 3 participating students.

**Individual Contribution**
All team members will be required to submit a word file copy of his/her contribution to the team. The goal is assess individual responsibility from group work. If necessary, individual grades may be adjusted in relation to the team’s grade based on contribution.

**Lead Writer**
I would like the primary responsibility for the main body of the report to rest with one person. This person would be the lead writer, in charge of format and presentation. Other team members could comment on these items and suggest changes to the lead writer but that person should be primarily in charge. On your time reporting sheet I want you to identify that person. The lead writer would have more hours than the other partners, most likely. I also want the lead writer to change on each assignment. Finally, each student should be the lead writer no more than twice. Be sure to document who this person is. If you have the words lead writer by your name and you were not in charge, you are cheating and will be subject to penalty and disciplinary action.

**Plagiarism:** Plagiarism is the use or close imitation of the language and thoughts of another and the representation of the other’s work as their own. The act of submitting work for evaluation or to meet a requirement is regarded as assurance that the work is the result of the student’s own thought and study, produced without assistance, and stated in that student’s own words, except as quotation marks, references, or footnotes acknowledge the use of other sources. Any ideas or materials taken from another source for either written or oral use must be fully and correctly acknowledged. Submission of work used previously must first be approved by the faculty member. Plagiarism includes, but is not limited, to the following actions:

- (a) Representing the work of others as his or her own; or
- (b) Submitting written materials without proper attribution or acknowledgment of the source.

If you have plagiarized, there will be a reduction in grade on the assignment, examination, or academic exercise on which the violation occurred. Plagiarism will not be tolerated. All individuals involved in any act of plagiarism will be reported to the Office of Student Conduct and will result in possible disciplinary action by the University.

**Google Drive:** The materials for this course will be available in Google Drive. All required course materials will be provided by the instructor through Google Drive.
Course Description:
The key objective of the course is to teach students to look at any engineering system, to fully understand its structure and characteristics, and know how to model and describe it in ways that are useful to engineers and for engineering applications. The course addresses the management, preservation, and maintenance of infrastructure assets. It deals with how to inventory assets, collect field and office inventory data, determine optimal condition assessment data, perform a field condition assessment, determine and assign a condition rating, assess and determine a criticality rating, evaluate risk and cost, and develop their repair, maintenance, and replacement strategies. The principles for doing so are applicable over the broad range of infrastructure activities from planning and preliminary engineering, through design and construction, and during maintenance and operations. It includes such topics as database design and management, advanced technologies, engineering constraints, and decision tables all applied to the creation maintenance and operation of our infrastructure.

CE 538 will include one of two case studies to demonstrate the application of the principles to various engineering scenarios. In both case studies links to GIS, GPS, and facility management will be explored. Relationships between geographic and database management systems will be studied. The application of the principles studied will especially be demonstrated for construction, environmental, transportation, and geotechnical applications. Also included will be an examination of the use of IT in support of disaster management related activities.

One case study will be especially of interest to construction and transportation students. It will focus on a highway network and will seek to illustrate the issues associated with representing transportation spatial (topology and geometry, point and segment data, locational data, and linear referencing), attribute, and temporal data. The link to the use of those same networks in construction scheduling and disaster response will be demonstrated.

The second case study focuses on the spatial, environmental, and geotechnical aspects of Oak Ridge National laboratory and considers all of the items associated with the transportation case study while adding emergency response operations (security for construction) and all of the issues that embodies. This case study includes the spatial layout of the facilities at the lab and their operations and is particularly related to transportation network emergency response in NC where need is dictated by floods, hurricanes, and tornados.

Students taking this course will learn to explore, evaluate, and assess new and emerging computing and information models and technologies and determine their role in engineering infrastructure preservation. These are most critical in engineering design, construction, manufacturing, and materials management.

Students with Disabilities: Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see the NC State University Academic Accommodations for Students with Disabilities Regulation (REG02.20.1).

N.C. State University Polices, Regulations, and Rules (PRR): Students are responsible for reviewing the PRRs which pertain to their course rights and responsibilities. These include: http://policies.ncsu.edu/policy/pol-04-25-05 (Equal Opportunity and Non-Discrimination Policy Statement), http://oied.ncsu.edu/oied/policies.php(Office for Institutional Equity and Diversity),
Incomplete Grades: Incompletes (IN) will be assigned at the instructor's discretion in line with the NC State policy on grades. Students will not be given a temporary grade of IN (incomplete) unless they have attended classes regularly for most of the semester, they have completed at least half of the required work, they have missed required work as a result of factors beyond their control, and they submit satisfactory documentary evidence of this. An IN grade not removed by the end of the next semester in which the student is enrolled or by the end of twelve months, whichever is earlier, will not be extended unless the student can present a compelling, well-documented case for extension; otherwise the IN grade will automatically become an F. For NC State policy on IN (incomplete) grades, see: http://policies.ncsu.edu/regulation/reg-02-50-03

Academic Integrity: The University policy on academic integrity is in the Code of Student Conduct (found in Appendix L of the Handbook for Advising and Teaching). The instructor expects the tests and final exam to be taken by students working alone, and the lab reports to be prepared by survey teams working independently. The instructor's understanding and expectation is that students submitting an exam, lab, or report abided by the NC State Honor Pledge, i.e., "I have neither given nor received unauthorized aid on this test or assignment." http://policies.ncsu.edu/policy/pol-11-35-01

Anti-Discrimination: NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that are free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on the all fore mentioned will also not be tolerated.

Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at: http://www.ncsu.edu/policies/campus_environ or at https://oied.ncsu.edu/equity/.

Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 515-3148.