Term: Summer 2011

CE 485/585 Construction Site Erosion and Sediment Control
215 AIME  5 to 6:55 pm Monday and Wednesday

Instructor: Robert Pitt
Office: 1005 Bevill
Grader and TA: Redahegn Sileshi (Redi) rksileshi@crimson.ua.edu  (submit pdf reports for grading to Redi at this email address)
Office Hours: anytime by email. I will be in my office for meeting with students generally on Wednesday afternoons between 2:30 and 4:30pm, or after class on Monday and Wednesday in AIME, if requested. Email me first to make sure I am in town if you need to come by.
Phone: (205) 348-2684.
e-mail: rpitt@eng.ua.edu  (UA) rpittal@charter.net  (home). Send large attachments to my UA email address only
Class and Research web page: http://rpitt.eng.ua.edu/index.shtml
Class web page: http://rpitt.eng.ua.edu/Class/Computerapplications/Table.htm

Catalog Description:

Prerequisites:
Introduction Environmental Engineering (CE 320) and basic engineering hydrology such as in CE 378 (or consent of instructor)

Course Objectives:
This course is intended for students, practicing engineers, and others, who are concerned with the management of construction site erosion. It will cover the mechanisms affecting local erosion, especially rainfall, soil, and topographic factors affecting erosion losses at urban construction sites. The use, design, and evaluation of construction erosion devices, including sediment basins, will be stressed. Emphasis will also be placed on meeting specific requirements of local and federal erosion control regulations.

At the successful completion of this course, the student will be able to prepare erosion control plans to meet regulatory requirements and to design erosion and sediment controls to meet specific objectives that consider site characteristics.

Required Tests and References:

Grading:
If you complete an assignment as given, and it is correct and presented in a professional manner, you will have done what is expected and will receive an “above average” grade. You will receive an “excellent” grade only for work of an outstanding caliber. Examples of above average and excellent completed assignments are shown on the class web site.

Class Assignments
1. Evaluation of a local construction site. We will do group projects this term due to the class size and to better share project responsibilities. Each project will be about 3 students and will be randomly determined on the first day of class. Select an active construction site that you can easily observe several times a week, along your commute (I rear-ended a car once doing a moving “windshield” survey of a construction site, so please park first!), near your home, work, or school. This is a special term as we want to assist Tuscaloosa and Birmingham in their storm recovery efforts. Projects will therefore focus in the damaged areas and will stress small commercial lots that will be rebuilding as soon as possible, along with larger housing areas. We want to develop and demonstrate a “short-fuse” erosion control process that can be applied quickly to small areas. Initially, each group will need to identify 1 primary site, along with 2 backups, that we will discuss in class and then make the final selections. Safe and legal access to the areas will be required, so don’t select sites where access on the public roads is restricted, or if you would be hindering any remaining cleanup activities. We will want only one group per site. Prepare a preliminary description of the sites (including general location, size, and status of current development) to discuss on June 15 and for class discussion for the three sites. We make final site assignments on the 15th, so come prepared.

2. Keep a diary of what is going on at the site (with photos also), specifically concerning erosion controls, erosion problems, stage of development, rain history, etc. Obtain a site plan and erosion control plan of the site, if possible, from the on-site engineers or from the city. You will prepare your own recommended construction site erosion control plan for this site, plus a short summary of your recommendations of what you observed during your site visits. This will count for about 10% of your class grade and will be due on the night of the last class.

3. During the course, you will be preparing a comprehensive construction site erosion control plan using the state of Alabama handbook format for your site in stages as we discuss the different class modules. Overall, this will count for about 70% of your grade in the class, divided between a preliminary (midterm) site description report and the final plan. You will also make 2 short presentations (at 10% of your grade each). We will only have about 5 minutes per student for the midterm and final presentations, and will require 2 class nights for each set of presentations. I also expect students to comment on their site during class discussions on related topics.

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<tr>
<th>Assignment</th>
<th>Percentage of Final Class Grade</th>
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<tr>
<td>Midterm report (preliminary site descriptions)</td>
<td>25%</td>
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<tr>
<td>Midterm presentation</td>
<td>10%</td>
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<tr>
<td>Final report (full plan)</td>
<td>45%</td>
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All assignments will be submitted as well-organized technical reports with sufficient descriptions of the methods used and assumptions made, and all other necessary documentation to enable an independent reviewer to fully understand how the designs were made and to allow the same calculations to verify the design.

**Attendance Policy:**
Students are expected to attend all lectures. In an absence is unavoidable, the student should contact the instructor before the class meets. Excessive unexcused absences may result in grade reductions. Class participation is required. Students are expected to do the reading before the class and be prepared to discuss. After student presentations, other students will also be expected to ask questions. Attendance will be taken periodically and the final grade will be reduced by the fraction of classes missed, unless excused. If you only attend 80% of the classes, your final class points will be reduced by 20%.

**Homework Policy:**
All project assignments are to be completed. Students will receive an incomplete if major assignments are not turned in.

**Course Portfolio Material:**
The UA CE program requires a portfolio to be assembled by each student for graduation. This portfolio will be made up of examples of assignments from different classes and will verify that the degree outcomes have been met. Material from this class will be useful for components of this graduation portfolio. A class portfolio will not be collected in this class, as each of the two project assignment will cover most of the outcomes listed below. If you have any questions concerning graduation portfolio material suitability from these assignments, feel free to discuss with me.

**Academic Misconduct:**
Any act of dishonesty in any work constitutes academic misconduct. The Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct and will be handled by the Dean’s office.

**Accommodations:**
Reasonable accommodations are made on an individualized basis. It is the responsibility of persons with disabilities, however, to seek available assistance and make their needs known. The University has designated the Office of Disability Services as the campus coordinating office for the provision and delivery of services and reasonable accommodations that ensure the University’s programs, services, and activities are accessible to students with disabilities. The Office of Disability Services is available to assist any student who has a qualified and documented disability. Please contact the Office of Disability Services at 348-4285 for additional information.
Class Topics (it is expected that students will read the course material before the class):
1. Nature and magnitude of erosion problems (Chapter 1)
2. Erosion control plan development and local and federal erosion control regulations (Chapter 2)
3. Local Alabama rains and their influence on erosion rates and control, and hydrology for the design of construction erosion controls (Chapter 3)
4. Theory of erosion and sediment transport in urban areas (Chapter 4)
5. Channel and slope stability applied for construction site erosion control (Chapter 5)
6. Temporary ponds and filter fabric barriers for construction site sediment control (Chapter 6)

Important Dates:

First Day of Class: June 1, 2011
Independence Day holiday: July 4, 2011
Last Day of Class: August 3, 2011
Final Exam: August 4, 2011 (6 to 8:30 pm)

The midterm presentations and report will include chapters 1 through 4 and will be appropriately scheduled. The comprehensive final report and presentation will cover all 6 chapters.

Periodically, classes will be cancelled due to committee or project meetings or technical conferences. Currently scheduled days of no class meetings include: June 8, July 4 (holiday), and July 6. Other days of no classes may occur and notice will be given to the students.
Relation of course to program outcomes: Students taking this course will:

| Outcome F1: | Match and Science. Solve problems in mathematics through differential equations, probability and statistics, calculus-based physics, general chemistry, and one additional area of science. Math and science serve as a fundamental aspect of most assignments and class topics. This class starts with a review of hydrology and soils topics and builds on those basic areas. (level 3). |
| Outcome T3: | Tools and Engineering Problems. Apply relevant knowledge, techniques, skills, and modern engineering tools to identify, formulate, and solve engineering problems, including problems in at least four technical areas appropriate to civil engineering, Knowledge of water resources and environmental engineering are applied in this class. (level 3). |
| Outcome T6: | Design. Develop solutions to well-defined problems within civil engineering. Design complex erosion prevention and sediment control devices, using principles from soils mechanics, hydrology, and water treatment. Newly emerging regulations are also examined and considered in these designs, along with costs and regional and local effects. (level 5). |
| Outcome T7: | Specialization. Explain key aspects of at least one traditional or emerging program-relevant area of advanced specialization. This class addresses bioengineering as an emerging area of civil engineering during topics that examine the interaction of plants and erosion control. Sediment control and transport is an advanced topic that is thoroughly explained during the class. (level 2). |
| Outcome P2: | Communication. Organize and deliver effective written, verbal, graphical and virtual communications. This class includes the preparation of written midterm and final class reports. The exams also include PowerPoint presentations. (level 4). |