**Catalog Description:**

**Prerequisites:**
Intro Enviro 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.

**Course Website:**
[http://unix.eng.ua.edu/~rpitt/Class/Computerapplications/Table.htm](http://unix.eng.ua.edu/~rpitt/Class/Computerapplications/Table.htm)

**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.

Class Assignments
1. Evaluation of a local construction site. 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 “windshield” survey of a construction site, so please park first!), near your home, work, or school. It should be one in relatively early stages of development (great if they are just starting clearing), and will proceed for the next 10 weeks, or so. We would like to use sites that are at least 5 acres, preferably >10 acres, in size, but probably less than a couple of hundred acres. It would be great if significant site work will be accomplished during the class period (including some site clearing and grading work); we would prefer if the site is not already graded and nearing completion. You will need to conveniently visit the site every week or so, so it should be relatively close by. Finally, some students will not have vehicles and on-campus sites will need to be reserved for them. Every year, some of the students who are working with engineering/construction firms use one of their own sites which works out well. Students will eventually need to contact the site engineers and obtain information. Initially, each student will need to identify 1 primary site, along with 2 backups, that we will discuss in class and then make the final selections. We really want only one student per site. Prepare a preliminary description of the site (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 75% of your grade in the class. You will also make a short presentation (we will only have about 12 minutes per student for the presentation, and 2 minutes for discussion) during the last class period and the final exam period. I also expect students to comment on their site during class discussions on related topics. These will be submitted to me by email. You must include the subject line on the email in the following format: 485 “assignment name” “student name”. Also, the assignment (as either a pdf or Microsoft word file) must also be named using the same format. If these formats are not followed, it is likely that they will be deleted amongst the more than 200 spam emails I receive a day and you will receive a zero for the assignment.

4. During the course, you will prepare 5 example problems, and worked out solutions for each chapter of the text. These will be due one week after we complete the module covering the chapter. In addition, I would appreciate it if you can also submit any corrections or suggestions to make the book material more clear when you submit the problems. This will account for 15% of your class grade.
**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 project assignment will cover most of the outcomes listed below. A class portfolio will not be required for students graduating this summer. Make sure you email me if you are graduating and have already submitted your graduation portfolio. Otherwise, UA students will receive an incomplete for the class. Class portfolios are not required for distant IITS students.

**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.

**Schedule/Topic Outline:**
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)
Final Exam: August 6, 2009 (6 to 8:30 pm)

Other Important Dates:
**First Day of Class**: June 3, 2009  
**Last Day of Class**: August 5, 2009

Periodically, classes will be cancelled due to committee meetings or technical conferences (June 17, 22, and 24; July 15 (possibly), and 22).
Relation of course to program outcomes: Students taking this course will:

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<tr>
<th>Outcome</th>
<th>Description</th>
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<tr>
<td><strong>Outcome F1:</strong> (Level 3)</td>
<td>Match and Science. <strong>Solve</strong> 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).</td>
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<td><strong>Outcome T3:</strong> (Level 3)</td>
<td>Tools and Engineering Problems. <strong>Apply</strong> relevant knowledge, techniques, skills, and modern engineering tools to <strong>identify</strong>, <strong>formulate</strong>, and <strong>solve</strong> 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).</td>
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<td><strong>Outcome T4:</strong> (Level 3)</td>
<td>Impacts of Historical and Current Events. <strong>Explain</strong> the impact of historical and contemporary issues on civil or construction engineering, and <strong>predict</strong> possible impacts of a specific, relatively constrained engineering solution on the economy, environment, and society. Global and societal issues are discussed during the class, especially recognizing that sediment from construction sites is the most severe water pollutant in most watersheds. The topic of erosion control cannot be taken in isolation. (level 3).</td>
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<td><strong>Outcome T6:</strong> (Level 5)</td>
<td>Design. <strong>Develop</strong> 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).</td>
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<td><strong>Outcome T7:</strong> (Level 2)</td>
<td>Specialization. <strong>Explain</strong> 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).</td>
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<td><strong>Outcome P1:</strong> (Level 4)</td>
<td>Professional, Ethical, and Legal Aspects. <strong>Describe</strong> the professional, legal, and ethical responsibilities of a civil or construction engineer. Design objectives and standards are examined, along with emerging regulations. The standards of practice for erosion control form the basis for ethical responsibility, along with needed changes associated with new knowledge and tools. Conflicts arise when these regulations restrict objectives of site developers. Class discussions review potential solutions. (level 2).</td>
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<td><strong>Outcome P2:</strong> (Level 4)</td>
<td>Communication. <strong>Organize</strong> and <strong>deliver</strong> effective written, verbal, graphical and virtual communications. This included the preparation of written midterm and final class reports. The final exam also includes a PowerPoint presentation. (level 4).</td>
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<td><strong>Outcome P5:</strong> (Level 2)</td>
<td>Licensure, Business and Globalization. <strong>Explain</strong> the importance of licensure, and basic concepts in engineering management, business, law, public administration, public policy, and globalization as related to the professional practice of civil engineering. Due to the changing nature of erosion control regulations and approaches, continued education in the field is discussed in the class and encouraged, along with basic and advanced registration and certification. (level 2).</td>
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