

**UNIVERSITY OF SOUTH FLORIDA
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING**

**CGN 6933, INSITU TESTING
Spring, 1999 Syllabus**

INSTRUCTOR: Gray Mullins, Ph.D., P.E., Assistant Professor
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OFFICE HOURS: Monday 11:00-12:00, or by appointment
CLASS MEETS: Monday 8-12 ENR 203
TEXTBOOK: Hand-Outs
CREDIT HOURS: 3 hours

COURSE OBJECTIVES:

To develop familiarity and competence in advanced geotechnical field testing of soils for engineering design purposes.

Lectures and field testing will emphasize student participation. The lectures will follow the outlined schedule to the extent that the necessary equipment is available. Materials associated with each of the testing procedures will be discussed in lecture, investigated in the field, and will be followed by an assignment to analyze and design with the collected data. Similar to other geotechnical testing courses, each report should contain sufficient documentation and discussion to allow another engineer familiar with the procedure to duplicate the experiment. Emphasis, however, will be placed the applicability of the results for design.

ATTENDANCE POLICY:

The nature of this course is such that students should attend every lecture and experimental session. It is the student's responsibility to submit all assignments on time and to answer homework and exam questions on topics covered or discussed in class which are not covered in, or in contradiction with the textbook.

RELIGIOUS OBSERVANCE POLICY:

No student will be compelled to attend class or sit for an exam in conflict with his/her religious belief. In such situations, the student must provide prior notification to the instructor in writing. The student will be given a reasonable opportunity to make up such work. This will be done on a case-by-case basis only for those religious days listed in the University Calendar of Religious Holy Days. This policy will in no way contradict that of the university-wide policy for religious observance.

MAKE-UP, MISSED WORK POLICY:

All homework on a given topic must be submitted during class, one week after the completion of that lecture topic if the student wishes the work to be graded. Homework is not required to be submitted, but it is strongly recommended for the successful mastery of the topics on which the examinations are based. In the event of an exceptional circumstance, a student may submit late work on a case-by-case basis at the discretion of the instructor.

PERFORMANCE EXPECTATIONS:

All submissions must be clear and orderly. Pertinent references and figures should be included where possible. Computerized solutions for data input are encouraged for each testing method. Although not a specific topic for this course, the use of data acquisition software and systems will be required for some procedures and will be the responsibility of the student to become familiar with this equipment as necessary.

- " Emphasis in the course will be on the correct formulation, physical understanding, and clear presentation of the design.
- " There is not one single correct solution to a design assignment; but rather, there exists a range of reasonable solutions within the given constraints. Proper presentation of a design must include consideration of safety, reliability, economics, and construct-ability.

Cumulative grades will be determined using the following distribution:

| | |
|-----------------------------------|-----|
| Homework Assignments (individual) | 60% |
| Cumulative Examination | 30% |
| Group Participation | 10% |

All assignments must be submitted for successful completion of the course.

DISPOSITION OF WORK:

Work that have not been collected by the students and exams will be discarded three months after the end of the semester. Students may obtain copies of their graded exams, but not the original.

ACADEMIC DISHONESTY POLICY:

Academic dishonesty is not tolerated under any circumstances. Any evidence of plagiarism, theft, or unethical conduct will be dealt with severely. Appropriate action will be taken on a case-by-case basis at the discretion of the instructor within the broad policy of the University.

S-U GRADE POLICY:

This course is not offered on an S-U grading basis for students in the CEE department. Students from other departments may request an S-U grade in writing within the first three weeks of the semester.

INCOMPLETE GRADE POLICY:

If a student feels that he/she will not be able to complete the minimum required work prior to the end of the semester, then the student may request in writing the assignment of an "I" grade (incomplete). An "I" grade will be granted only under extenuating circumstances provided the student has a "C" grade or better at the mid-term. This will be done on a case-by-case basis at the discretion of the instructor.

COURSE OUTLINE

(by topic)

Standard Penetration Test (SPT)

- Manual
- Automatic

Cone Penetration Test (CPT)

- Mechanical cone
- Electronic cone
- Piezo-cone
- Seismic cone
- Electrical conductivity
- Miniature continuous feed
- Cone pressuremeter
(Inclinometer)

Dynamic Cone Penetrometer (DCP)

- Correlations to CBR

Pressuremeter (PMT)

- pre-bored
- self-boring
- cpt-pmt

Dilatometer (DMT)

- standard
- offshore (piezo)
- Load cell (q_d)

Iowa Stepped Blade

Borehole Shear Test (BST)

Screwplate (SPLT)

Plate Load Test (PLT)

Permeability Tests

- Borehole
- Porous probes
- Double Ring Infiltrometer

Pile/Shaft Load Tests

- Static
- Statnamic
- Bi-directional
- Dynamic

Field Vane Shear

Seismic Testing

- Seismic refraction
- Seismic Crosshole
- Seismic Down-hole
- Resonant footing

Performance Monitoring Devices

- Inclinometers
- Soil Stress Cells
- Magnetic Extensometers
- Piezometers
 - Pneumatic
 - Electronic
- Load Cells
- Soil Strain gages