PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT: Engineering

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

☑ 1. New course with supporting documents
☐ 2. Add existing course offered at another campus
☐ 3. Expiration of a course
☐ 4. Change in course number
☐ 5. Change in course title
☐ 6. Change in course credit/type
☐ 7. Change in course attributes (department head signature only)
☐ 8. Change in instructional hours
☐ 9. Change in course description
☐ 10. Change in course requisites
☐ 11. Change in semesters offered (department head signature only)
☐ 12. Transfer from one department to another

PROPOSED:

Subject Abbreviation: CE
Course Number: 381
Long Title: Soil Mechanics Laboratory
Short Title: Soil Mechanics Lab

EXISTING:

Subject Abbreviation
Course Number

TERMS OFFERED:

☐ Summer
☐ Fall
☑ Spring

CAMPUS(ES) INVOLVED:

☑ Calumet
☐ Cont Ed
☑ Ft. Wayne
☐ Ind. Tech
☐ N. Central
☐ Tech State
☐ W. Lafayette

CREDIT TYPE

1. Fixed Credit: 1 Hr.
2. Variable Credit Range:
   Minimum Cr, Hrs
   To
   Or
   Maximum Cr, Hrs
3. Equivalent Credit: Yes

Schedule Type

Lecture
Recitation
Presentation
Lab Prep
Studio
Distance
Clinic
Experimental
Research
Ind. Study
Practicum

Cross-Listed Courses

COURSE ATTRIBUTES:

☐ 6 Registration Approval Type
   Department
   Instructor

☐ 7 Variable Title

☐ 8 Honors

☐ 9 Full Time Privilege

☐ 10 Off Campus Experience

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
P: CE 380. Performing various laboratory tests to determine the characteristics and mechanical properties of soil according to the procedures and standards set by the American Society for Testing and Materials (ASTM).

☑ Donald Mulley 12/22/08

☑ Calumet School Dean

☑ Fort Wayne Department Head

☑ Fort Wayne School Dean

☑ Indianapolis Department Head

☑ Indianapolis School Dean

☑ North Central Department Head

☑ North Central Chancellor

☑ West Lafayette Department Head

☑ West Lafayette College/School Dean

☑ West Lafayette Registrar

OFFICE OF THE REGISTRAR
Required Course:  
**CE 381 – Soil Mechanics Laboratory**  
Offered each spring

Catalog Data:  
Performing various laboratory tests to determine the characteristics and mechanical properties of soil according to the procedures and standards set by the American Society for Testing and Materials (ASTM).

Prerequisites:  
**CE 380 – Soil Mechanics**

Corequisite:  
N/A

Required Textbook:  
None

Reference:  

Course Objectives:  
Students will able to identify physical and mechanical properties of soil in the field and laboratory settings. Student will be familiar with ASTM laboratory test standards and procedures. This include preparing soil samples for testing, performing the test, collecting and analyzing data, interpreting the results and writing technical reports.

Schedule:  
One 150-minute class per week.

Laboratory Topics

1. Orientation, introduction, lab safety, sampling procedure  
2. Experiment 1: Moisture Content Determination  
   Experiment 2: Organic Matter (Content)  
3. Experiment 3: Unit Weight (Density)  
   Experiment 4: Specific Gravity of Soil Solids  
4. Experiment 5: Atterberg Limits  
5. Experiment 6: Grain Size Distribution- Sieve Analysis  
   Experiment 7: Grain Size Distribution- Hydrometer Analysis  
6. Experiment 8: Visual Classification  
7. Experiment 9: Moisture-Density Relationship (Compaction Test)  
8. Experiment 10: Hydraulic Conductivity- Constant Head Method  
9. Experiment 11: Shear Strength- Unconfined Compression Test  
10. Experiment 12: Field Collection of a Soil Sample  
11. Experiment 13: Boring Logs and Soil Profiles Preparation  
12. Experiment 14: California Bearing-Ratio (CBR) test  
13. Experiment 15: Consolidation Test  
14. Experiment 16: Demonstration of Triaxial Shear Tests  
15. Experiment 17: Determination of In-Place Soil Density  
16. Final Exam
Course Outcomes

Upon successful completion of this course, students shall be able to:

1. perform common soil tests to identify physical and mechanical properties of soils. [a (1), b (3), e (2)]

2. be familiar with soil mechanics tests and determines which test is needed in designing civil engineering projects and/or solving engineering problems. [b (3), c (4), e (2)]

3. prepare soil samples for testing, performing the test, collecting and analyzing data according to ASTM. [b (3), f (7), k (6)]

4. apply the laboratory results to problem identification, quantification, and basic soil mechanics related design problem. [e (2)]

5. demonstrate the ability to write clear technical lab reports. [g (8)]

6. use word processors and other modern software packages in writing and finishing the report. [g (8), i (9)]

7. demonstrate the ability to work in groups. [d (5), g (8)]

8. understand and apply ethical issues associated with decision making and professional conduct in the lab and field environment. [f (7)]

9. understand the impact of the lab and field environment. [f (7)]

Letters and numbers in parentheses refer to ABET outcomes and their correspondence BSCE program Outcomes.

ABET category

Engineering science: 0.75 credits or 75%
Engineering design: 0.25 credits or 25%