Syllabus for CET2251 - Soil Technology

General Information

Course Title - Soil Technology
Course Number - CET2251

Credits - 4 credits
Class Hours - 42 hours (3 hours per week)
Laboratory Hours - 42 hours (3 hours per week)
Prerequisite Courses - None

Professor - Larry Sutter
Room 232 EERC Building
487-2268
llsutter@mtu.edu
Office Hours: By Arrangement

Course Outcomes - Introduce and apply the fundamentals of soils engineering technology including soil composition, classification, testing, strength, and basic foundation design for solving civil engineering and construction problems. Also introduce the standardized field and laboratory tests used to verify the properties of soils for construction.

Course Description - An introduction to the engineering properties of soils, and the corresponding laboratory tests needed to classify and identify these properties.

Textbooks - "Soils in Construction"
W.L. Schroeder, S.E. Dickenson
ISBN 0-13-048917-4

References - To be handed out in class or distributed on the WWW.

Computer Usage - Moderate - Must use a word processor to prepare reports, spreadsheets for calculations and plotting data, and e-mail program for communicating with the Professor and other students.

Calculus Usage - None

Library Usage - Will be required to review ASTM standards in the Library
Grading

Attendance/Participation - Recommended 20 Points Overall

Communication Skills Required - Students will be asked to write lab reports and write paragraphs as part of the quizzes and examinations. 10 Points Overall

Quizzes and Homework - Quizzes lasting approximately 20 minutes will be given in class as appropriate. Approximately 1 homework assignment (average) will be collected for grading each week. A quiz or homework assignment is weighted for significance by the total possible number of points allotted for the individual assignment. 35 Points Overall

Hour Examinations - 3 - One (1) hour examinations. 35 Points Overall

Final Examination - Comprehensive 20 Points Overall

Laboratory - Specifics on laboratory assignments and grading will be given out in lab by the instructor, Ron Mauno 80 Points Overall

Overall Grading - 200 point system / Converted to Percent Overall via a straight curve

Note: Straight curve means 100%-95%=A, 94%-90%=AB, 89%-85%=B, 84%-80%=BC, 79%-75%=C, 74%-70%=CD, 69%-65%=D, below 65%=F. All fractional values of Overall Grade rounded up.

Late Assignments - All late assignments will have 10% deducted for each day late. No assignments accepted after 7 calendar days.
**Grading cont.**

**Example Calculation**

**Quizzes and Homework**
- Homework 1 - 5/5
- Homework 2 - 6/10
- Homework 3 - 9/10
- Homework 4 - 8/10
- Homework 5 - 9/10
- Homework 6 - 8/10
- Homework 7 - 7/10
- Homework 8 - 14/20
- Homework 9 - 8/10
- Homework 10 - 9/10
- Homework 11 - 7/10
- Homework 12 - 9/10
- Quiz 1 - 8/10
- Quiz 2 - 0/20
- Quiz 3 - 8/10

**Quiz/Homework Grade** = $\frac{115}{165} = 69.7\% = 24.4$ overall points

**Examinations**
- Exam 1 - 92%
- Exam 2 - 89%
- Exam 3 - 88%

Examination Ave. = 89.7% = 31.4 overall points

**Final Examination**
- Final - 79% = 15.8 points

**Class Participation ***
- 100% = 20.0 points

**Communication ***
- 90% = 9.0 points

* Based upon instructor review, and as applicable, peer review.

**Laboratory**
- 68 of 80 possible points = $\frac{68}{80} = 85\% = 68$ points

**Overall Grade**
- 168.6 of 200 possible points = $\frac{168.6}{200} = 84.3\% = B$
Cheating and Plagiarism

Anyone engaging in activities deemed to constitute cheating or plagiarism will be given an F in the course and turned over to the Dean of Students for disciplinary action consistent with the Code of Student Conduct and University Policies.

Unless otherwise instructed in writing by the Professor, all students are expected to do their own assignments and examinations.

MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990 (ADA).

If you have a disability and need reasonable accommodation for equal access to education or services, please contact the Dean of Students Office for assistance. For other concerns about discrimination, you may contact your advisor, department head, or the Affirmative Action Office.
<table>
<thead>
<tr>
<th>Week</th>
<th>Recitation</th>
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| Week 1 | Intro to Geology  
Weathering, Soil Deposits, Soil Constituents  
Sieve Analysis, Index Properties |
| Week 2 | Soil Particle Size, Gradations  
Clay Mineralogy  
Soil Classifications in General, Soil Size Terminology, Hydrometer Tests |
| Week 3 | Soil Phase Relationships  
Soil Phase Relationships  
Soil Phase Relationships |
| Week 4 | Soil Plasticity, Atterberg Limits, Soil Structure  
Soil Classifications - USDA, AASHTO, Unified |
| Week 5 | Soil Classifications - USDA, AASHTO, Unified  
Soil Compaction |
| Week 6 | Soil Compaction, Proctor Test, Unit Weight  
Soil Water Relationships  
Soil Water Relationships, Permeability |
| Week 7 | Stress, Mohr's Circle  
Effective Stress  
Effective Stress, Vertical Earth Pressure |
| Week 8 | Effective Stress, Capillary Rise  
Compressibility |
| Week 9 | Consolidation  
Soil Strength  
Soil Strength Tests |
| Week 10 | Earth Volume Calculations  
Field Explorations |
| Week 11 | Soils Reports  
Dewatering  
Groundwater Conditions |
| Week 12 | Excavations and Supports  
Foundation Construction - Bearing Failure |
| Week 13 | Foundation Construction - Settlement Analysis  
Footings and Rafts  
Foundation Pilings |
| Week 14 | Drilled Piers  
Pavement Components, Subgrade Materials  
Methods of Construction and Compaction |