

Revised
Sept. 87

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

SOIL MECHANICS AND HIGHWAY ENGINEERING

Course Title: _____

Code No.: _____ ARC 231-3

Program: _____ CIVIL/CONSTRUCTION

Semester: _____ THIRD

Date: _____ JUNE 1985

Author: _____ W. R. DAVIES

New: _____ Revision: _____ X

APPROVED: J.P. Crozitto
Chairperson

87.04.21
Date

SOIL MECHANICS & HIGHWAY ENGINEERING

ARC 231-3

TEXTS:

Highway Materials, Soils and Concretes - Atkins

Construction Methods and Management - Nunally

REFERENCES:

Foundation Engineering - Peck Hanson and Shrouburn

Soil Mechanics in Engineering Practice -
Terzaghi & Peck

Soil Engineering - Spagler

Procedures for Soil Testing - A.S.T.M.

Bituminous Materials - A.S.T.. et seq.

Measurement of Soil Properties - Bishop & Henkol

Soil Mechanics and Engineering - Scott and Schoustra

COURSE OBJECTIVES

SOIL MECHANICS AND HIGHWAY ENGINEERING

ARC 231-3

SPECIFIC OBJECTIVES:

Unit 1 - Review

1. Identify the nature and engineering properties of the three classes of rock.
2. Describe the nature and engineering properties of the two classes of subsoil.
3. Identify and illustrate the intent of all laboratory investigations performed in Semester 1.

Unit 2 - Soil Mechanics

1. Identify those topographical features of a site that indicate its subsoil properties.
2. Prepare a schedule of equipment for a typical subsoil investigation.
3. Schedule a procedure for carrying out such an investigation.
4. List the steps necessary to ensure satisfactory sample recovery.
5. Participate in a three man site investigation party.
6. Prepare schedules and procedures of the investigation.
7. Prepare a bore hole log for a site which the student has drilled.
8. Recover at least three bored samples in an "undisturbed" form, and three "disturbed" samples.
9. Submit a written report on the site exercise together with site plan and logs.
10. Using the disturbed samples prepare a soil classification.
11. Determine the Atterberg limits and in-site moisture content of the sampled soil.
12. Perform an unconfined compression test on at least two undisturbed samples.
13. Calculate the bearing value of the subsoil from experimental data.
14. Maintain both a daily diary and a neat laboratory record of all site investigation work.

2. List the equipment required for:

- a) preparing and reinstating the site
- b) the excavation, filling and consolidation of the major earthworks
- c) the development of the gravel quarry and the grading and compaction of the finished carpet

3. Sketch the site layout at weeks 1, 4, 12, 16, and 20.

4. Estimate the overall job cost and the unit cost per cubic yard of material excavated.

5. Submit a detailed calculation of all quantities using Simpson's Rule.

6. Submit a written proposal for the work as would be tendered by a contractor.

7. Make an oral presentation to the class of your proposal.