

CALENDAR DESCRIPTION

GEO 277-4

STRUCTURAL GEOLOGY

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

PHILOSOPHY/GOALS: The general objectives of the course are as follows:

COURSE OUTLINE

Course Title: STRUCTURAL GEOLOGY

Code No.: GEO 277-4

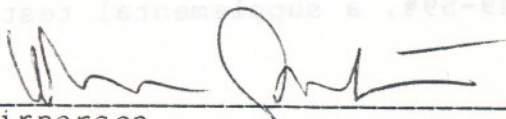
Program: GEOLOGICAL ENGINEERING TECHNICIAN

Semester: III

Date: SEPTEMBER 1988

Author: MANFRED ENGEL

New: _____ Revision: X

APPROVED:  September 15, 1988

Chairperson _____ Date _____

CALENDAR DESCRIPTION

STRUCTURAL GEOLOGY

GEO 277-4

COURSE NAME

COURSE NUMBER

PHILOSOPHY/GOALS: The general objectives of the course are as follows:

1. To cause the student to visualize geological structures in three dimensions.
2. To teach the student the necessary graphical techniques and methods related to descriptive geometry. To describe, measure, plot and reconstruct certain geological structures.
3. To teach the student to relate geological structures on maps to the shape and size of structures at depth.

METHOD OF ASSESSMENT (GRADING METHOD):

Four written tests:

| | |
|------------------------------------|-----|
| True and apparent dip | 15% |
| Depth and thickness determinations | 15% |
| Outcrop patterns | 15% |
| Faults | 15% |

| | |
|---------------------------------------|-------------|
| Lab book with approximately 30 plates | 40% |
| | <u>100%</u> |

- A+ = 90-100%
- A = 80-89%
- B = 70-79%
- C = 60-69%
- R = 0-59%

If the semester average is between 49-59%, a supplemental test may be given.

TEXTBOOK(S):

Structural Geology An Introduction, John G. Dennis

| TOPIC NO. | PERIODS | TOPIC DESCRIPTION | REFERENCE |
|-----------|---------|---|--------------------|
| 1 | 6 | <u>Plate Tectonics and Tectonics Movements</u> - plate model - plate motion - recent tectonic movements | Chapter 1 and 2 |
| 2 | 3 | <u>Geometric Representation of Rock Structures</u> - lines and planes - field techniques - primary structures | Chapters 3 & 4 |
| 3 | 6 | <u>True and Apparent Dips</u> - terminology - graphical methods of finding true dip from two apparent dips, and apparent dip from true dip - trigonometric methods of finding true dip from two apparent dips - use of alignment diagrams - practical exercises | Appendix A |
| 4 | 2 | <u>Stress and Strain</u> - units and dimensions - measuring strain | Chapter 5 |
| 5 | 6 | <u>Thickness Determinations</u> - terminology - solutions for simple cases - horizontal beds and vertical beds - traverse perpendicular to strike of dipping beds - practical exercises | Appendix A |
| 6 | 6 | <u>Depth to Dipping Strata</u> - depth to planar units - strata with changing dip - use of nomogram for calculating depth to strata - bed thickness in a well - distance along inclined hole - practical exercises | Appendix A |

| TOPIC NO. | PERIODS | TOPIC DESCRIPTION | REFERENCE |
|-----------|----------|--|------------------------|
| 7 | 3 | <u>Flow of Rocks</u> - models - mechanism of flow in rocks | Chapter 6 |
| 8 | 4 | <u>Folds</u> - geometry of folds - cross sections - folding mechanisms | Chapters 7 & 8 |
| 9 | 6 | <u>Outcrop Patterns and Three-Point Problems</u> - rule of the V's - three-point problem - plotting outcrop patterns - practical exercises | Appendix A |
| 10 | 8 | <u>Faults</u> - terminology - analysis of displacement - intersection of a fault and a plane - geological setting of faults - practical exercises | Chapters 11, 12, 14 |
| 11 | 4 | <u>Stereographic Projections</u> - principles - types of projections - Smith and Wolff Net | Appendix A |
| | 6 | TESTS | |
| TOTAL | 60 Hours | | |