

SAULT COLLEGE  
of Applied Arts and Technology  
Sault Ste. Marie

COURSE OUTLINE

FIELD GEOLOGY *I*

GEO 114-4

revised March, 1983 by S. Verma

FIELD GEOLOGY

GEO 114 - 4

INSTRUCTOR: S. C. Verma

OFFICE: D103

TEXT: Labee, F. H., 1961. Field Geology, McGraw - Hill Book Company  
Toronto, Ontario  
(6th ed.)

REFERENCES:

Prospecting in Canada  
Manual of Field Geology - Comptom  
Structural Geology - Billings  
U. S. G. S. Professional Paper 373  
Aerial Photographs in Geologic Interpretation and Mapping

ASSIGNMENTS AND FIELD REPORTS: are due at 1700 hrs on the date of sub-  
mission (will be announced in the class)

BASIS OF FINAL MARK:

Assignments and field reports	30%
Mid-term examination	25%
Final Examination	45%
	<u>100%</u>

ATTENDANCE:

Attendance is compulsory for field exercises.

## FIELD GEOLOGY

### 1. INTRODUCTION

- Scope of field geology

Discussion of methods used, data collected; relationship to other branches of geology; rock outcrops and where they are likely to occur.

### 2. MAGNETIC DECLINATION

- Geographic and magnetic north poles. Magnetic declination; isogonic lines; agonic lines

- Azimuths versus bearings

Conversion from azimuths to bearings; conversion of true azimuths and bearings to magnetic azimuths and bearings and vice versa

- Reversal of compass orientations

- Homework exercises in conversion

- Notebook - note taking

### 3. COMPASS, CLINOMETER, HANDLEVEL

- Familiarization with the instruments

Laboratory study and discussion; campus traverses (silva and box compasses)

- Homework exercises using clinometer and handlevel notes based on field work

- Determination of relative elevations of points

### 4. METHODS OF FIELD TRAVERSING

- Methods of location points, triangulation, pace and compass traverses; topographic profiles

- Exercises in plotting traverses from notes. Use of protractor, triangles, engineer's scale

- Field safety procedures

- Taking of samples

### 5. FIELD PRACTICE - TRAVERSING

- Plotting field data

### 6. AERIAL PHOTOGRAPHS AS AN AID TO GEOLIGIC MAPPING

- Types of aerial photographs

Vertical photos; oblique photos

- Discussion of status aerial photography ordering
- Cameras; focal lengths; attitudes; scales; layout of flight lines; overlap; sidelap; distortions
- Uses of aerial photographs in geologic mapping (discussions)
- Location of outcrops; planning traverses; preparing base maps
- Exercises in location outcrops using the stereoscope. Plotting outcrops on base maps prior to field traversing; planning traverses.

#### 7. FIELD PRACTICE - TRAVERSING WITH AERIAL PHOTOGRAPHS

- Carrying out pre-planned traverses
- Plotting data

#### 8. PRIMARY ROCK STRUCTURES

- Study of primary features of sedimentary, volcanic, and plutonic rocks.  
Use of colour slides for illustration
- Field trip to Batchawana Bay
- Bellevue for strike and dip (map the quarry)
- Buttermilk Hill

#### 9. SCIENTIFIC PHOTOGRAPHY

- Cameras, lenses and filters
- Films
- Type of photographs taken in field
- Scales used in scientific photography

#### 10. MAP READING

- Map Scales
- Types (Topographic, geological, geophysical, geochemical)
- National Topographic Systems (N. T. S.)  
Profile drawing of a map in Isle Pansienne Sheet
- Plotting of traverses on different scale maps