SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

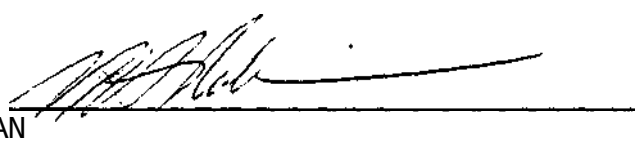
COURSE TITLE: FIELD HYDROLOGY

CODE NO.: WTR 100-4 **SEMESTER:**

PROGRAM: WATER RESOURCES ENGINEERING TECHNOLOGY

AUTHOR: SUBHASH C. VERMA

DATE: APRIL 1990 **PREVIOUS OUTLINE DATED:** SEPT. 1989

APPROVED;  DEAN DATE

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TOTAL CREDIT HOURS: 75

PREREQUISITE(S): NONE

I. PHILOSOPHY/GOALS:

This course deals with linear and angular measurements, compass and map utilization, slope measurements, the hydrologic cycle, hydrometric measurements and computations.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Do linear and angular measurements
2. Do conversion of units and calculations of areas
3. Conduct traverse surveys, make computations, use a compass, interpret topographic mapping, and compute watershed areas
4. Run a traverse from map to field
5. Study a topographic map and map indexing
6. Determine slope using linear and angular measurements
7. Draw a contour map and determine stream flow directions
8. Describe the hydrologic processes
9. Perform hydrometric measurements including streamflow, precipitation and evaporation
10. Compute average rainfall for a given storm over an area
11. Interpret stage flow hydrographs, rainfall and other continuously monitored hydrologic variables
12. Calculate various physical parameters of a sample watershed

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H I . TOPICS TO BE COVERED:

1. INTRODUCTION

   1.1 Importance of field surveys
   1.2 Linear and angular measurements
   1.3 Conversion of units, (SI and English)
   1.4 Area computations
   1.5 Scale conversions

2. COMPASS SURVEY

   2.1 Familiarization with the instruments (compass, chain, measuring tape)
   2.2 Declination, bearing, azimuth
   2.3 Methods of field traversing
   2.4 Computations
   2.5 Exercises in plotting traverse

3. MAP UTILIZATION

   3.1 Topographic maps utilization
   3.2 Delineation of watersheds
   3.3 Contour maps
   3.4 Slope determination
   3.5 Geomorphic characteristics of a watershed

4. INTRODUCTION TO HYDROLOGY

   4.1 Water resources engineering
   4.2 Hydrologic cycle and processes
   4.3 Water budget
   4.4 Weather patterns
   4.5 Precipitation and evaporation measurements
   4.6 Stream flow surveys
   4.7 Stream flow records
   4.8 Probability of hydrologic events
   4.9 Ground water hydrology
   4.10 Water table measurements and maps

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IV. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

Field work and assignments	35%
Mid term examination	25%
Final examination	.40%

GRADING

A+	90 - 100	
A	80 - 90	
B	70 - 79	
C	60 - 69	

A passing grade will be based on a minimum grading of 60%. Students with a gradescore of 55 to 59% may be allowed to complete a supplementary examination.

V. REQUIRED STUDENT RESOURCES:

- Laboratory Manual For Plummer/McGeary's Physical Geology, by J.H. Zurmberge and R.H. Ruttford. Wm. C. Brown Company publishers, DuDuque, Iowa.

VI. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

- Hydrology and Quality of Water Resources (1981)
  by M.J. Hammer and K.A. MacKichan
  John Wiley & Sons