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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: FOREST MAPPING

CODE NO.: FOR115-3 SEMESTER: ONE

PROGRAM: FORESTRY TECHNICIAN

AUTHOR: ERWIN GOERTZ

DATE: SEPTEMBER 1992 PREVIOUS OUTLINE DATED: DECEMBER 1991

APPROVED: _____ June 3/92
DEAN DATE

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TOTAL CREDIT HOURS: 48

PREREQUISITE(S): None

I. PHILOSOPHY/GOALS:

The overall aim of forest mapping is to teach the skills necessary for the professional presentation of a technical map as well as being able to read out and interpret map information.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1. Understand and use correct signs and symbols related to mapping forest, water, land and cultural features.
2. Demonstrate skill in free had and mechanical lettering.
3. Use and interpret various types of maps. e.g. forest stand map, base map, topographic map and OBM map.
4. Use basic drafting equipment such as T-square, metric scale, imperial scale, Ames lettering guide and mechanical lettering set.
5. Demonstrate skill in line work, area determination (dot grid, line transect method, planimeter), and drafting a complete map.

III. TOPICS TO BE COVERED:

1. Free hand lettering using single stroke Commercial Gothic lettering.
2. Using an Ames lettering guide for drawing lettering guidelines.
3. Units of measurements used in Forestry and appropriate conversions.
4. Using an Engineer's (imperial) scale and a metric scale.
5. Using a navigational protractor for direction measurements.
6. Understand the UTM projection.
7. Reading contour elevations and applying tophographic maps (NTS, OBM) for gradient determination and profile mapping.
8. Using a technical pen and mechanical lettering set.
9. Understanding forest stand map symbols, line types & descriptions.
10. Area determination using dot grids, equations and planimeters.
11. Applying field notes in map preparation (mapping a closed traverse).

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IV. LEARNING ACTIVITIES:

LEARNING ACTIVITY:	REQUIRED STUDENT RESOURCES:
1. LETTERING STYLE	
1. Correctly letter upper and lower case letters and numbers in the single stroke commercial Gothic lettering style. 2. Correctly letter the alphabet and numbers, both diagonally (slanted) and vertically.	- 2H, H pencils - white bond paper - eraser - T-square - Set square
2. AMES LETTERING GUIDE	
1. Use the Ames Lettering Guide effectively to create guidelines for letters of different heights in both imperial and metric units. 2. Understand the difference between the three right most columns of holes on the lettering guide. 3. Use the lettering guide to draw vertical and diagonal (slanted guidelines).	- 2H, H Pencils - White bond paper - Masking tape - Eraser - T-square - Set square - Ames lettering guide
3. FORESTRY UNITS OF MEASUREMENT AND CONVERSIONS	
1. Be familiar with metric units in general and be able to identify the units used for forestry measurements. 2. Be able to convert metric units to imperial units and vice versa. 3. Be able to round decimal fractions.	- 2H, H pencils - Calculator
4. ENGINEER'S SCALE AND METRIC SCALE	
1. The student will be able to use the Engineer's Scale for distance measurements. 2. The student will be able to use the Metric Scale for distance measurements. 3. The student will recognize the difference between map scales, be able to convert map scales and recognize which Scale (Engineer's or Metric) is appropriate for the distance measurement.	- 2H, H pencils - Engineer's scale - Metric scale - eraser

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IV. LEARNING ACTIVITIES: (cont'd)

LEARNING ACTIVITY:	STUDENT REQUIRED RESOURCES:
5&6. NAVIGATIONAL PROTRACTOR	
1. The student will be able to identify the difference between azimuths and bearings. 2. The student will know what magnetic declination is and how it affects direction readings. 3. The student will be able to identify the difference between true distance readings and magnetic distance readings. 4. The student will be able to use a navigational protractor in order to find directions on maps and be able to convert between a true azimuth, true bearing, magnetic azimuth and a magnetic bearing.	- 2H, H pencils - Engineer's scale - Metric scale - eraser - navigational protractor - T-square - masking tape - Ames Lettering Guide
7. GRID NETWORKS	
1. The student will know how to geographically reference the location of any point in Ontario using both the geographic projection system (longitudes/latitudes) and the UTM projection system. 2. The student will know the applications of the UTM projection system as it relates to different disciplines in forestry.	- 1:50,000 (NTS) Topographic map (provided) - Metric Scale - T-square - Imperial Square
8&9. TOPHOGRAPHIC MAPS AND READINGS CONTOURS	
1. Students will be able to read a topographic map and recognize individual contour line elevations. 2. Using the rules for contour lines, students will be able to draw a contour map using spot heights. 3. Students will be able to draw a topographic profile from one point to another. 4. Students will be able to calculate the gradient of slopes.	- 2H, H pencils - Topographic Map (1:50,000) (provided) - Navigational Protractor - Engineer's Scale - Metric Scale

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IV. LEARNING ACTIVITIES: (cont'd)

LEARNING ACTIVITY:	REQUIRED STUDENT RESOURCES:
10. TECHNICAL PEN	
1. Student will be able to disassemble, clean and reassemble a technical pen. 2. Student will know how a technical pen operates along with its peculiarities. 3. Student will know how to properly use a technical pen and how to store it properly.	- Technical Pen Set (0.35 tip and 0.50 tip) including black drawing ink - Ames Lettering Guide - 2H pencil
11. FOREST STAND MAP SYMBOLS AND LETTERING AIDS	
1. Students will be able to identify all lines, numbers and symbols on a Forest Stand Map and be able to explain what they mean. 2. Students will be able to professionally letter maps using the lettering template or the mechanical lettering set.	- 2H, H pencils - Technical pens - Lettering template or Mechanical Lettering set - T-square - Blank paper - Tape
12. AREA DETERMINATION PART I	
1. The student will be able to determine ground areas using maps at scales of 1:10,000, 1:15,840, and 1:50,000 in either acre or hectare units. 2. The student will be able to determine ground areas using a dot grid, using the line transect method or using basic area equations.	- 2H, H pencils - eraser - Scales or rule - Calculator
13. AREA DETERMINATION PART II	
1. Students will be able to determine actual ground areas using either a conventional planimeter or digital planimeter for maps which are at different scales.	- 2H, H pencils - eraser - digital planimeter or conventional planimeter - calculator - masking tape

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IV. LEARNING ACTIVITIES: (cont'd)

LEARNING ACTIVITY:

14&15. MAPPING A TRAVERSE

1. Students will be able to map traverses given field distances and directions.
2. Students will further develop their skills with the metric scale, navigational protractor and lettering template or mechanical lettering set.
3. Students will be aware of field accuracies when conducting field traverses.

REQUIRED STUDENT RESOURCES:

- 2H, H pencils
- White bond paper
- Eraser
- Metric Scale
- T-square, set square
- Navigational Protractor
- Technical Pens
- Lettering Templates or Mechanical Lettering Set

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V. EVALUATION METHODS:

1. Quizzes - 20%

2. Assignments - 60%

Freehand Lettering	Marks
1. Lettering	10
2. Ames Lettering guide	10
3. Forestry units of measurements and conversions	10
4. Engineer's scale and metric scale	15
Mapping	
5. Navigational protractor	15
6. Grid networks	--
7. Topographic maps and reading contours	15
8. Technical pen	20
9. Forest stand map symbols and lettering aids	25
Area Determination	
10. Part I	25
11. Part II	25
Field Notes and Map	
12. Mapping a traverse	30
	200

3. In-Class Assignment - 20%

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VI. REQUIRED STUDENT RESOURCES:

Equipment required by each student:

2H, H pencils; blank white bond paper, masking tape, eraser, Engineer's (imperial scale) 1-60 points, Metric scale (1:500 to 1:2500), Ames lettering guide, set square, T-square, Navigational protractor, Staedtler pen set (0.50 and 0.35 tips), Staedtler lettering templates.

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

Blair, C. L., R.I. Simpson, The Canadian Landscape: Map and Air Photo Interpretation, Copp Clark Pitman.

McHarg, I. L., Design with Nature, Natural History Press.

Raisz, E., Principles of Cartography, McGraw-Hill.

Robinson, A.H., Elements of Cartography, John Wiley & Sons.

Thomasson, R.D., Ontario Land Inventory: Wildlife, Ministry of Natural Resources.

VIII. SPECIAL NOTES:

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.