

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON.

COURSE OUTLINE

COURSE TITLE: Drafting and Design
COURSE CODE: ARC 115
PROGRAM: Civil Engineering Technician/Technology
SEMESTER: II (Winter)
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DATE: 4 January 1995

PREVIOUSLY DATED:

APPROVED: *J.P. Choquette*
(DEAN)

DATE: 95-01-04

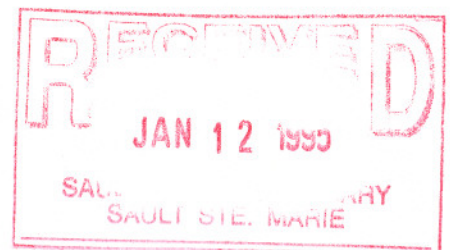
(COORDINATOR)

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TOTAL HOURS PER WEEK: 4
PREREQUISITES: ARC111

I. PHILOSOPHY AND GOALS

This course provides the student with an opportunity to refine drafting skills acquired in ARC111, as well as develop more specialized graphic representation skill and understanding. The student will also be introduced to basic computer aided drafting. The student will demonstrate these skills and knowledge by preparing drawings for a variety of projects using CAD and manual drafting techniques.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES)

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

1. Prepare freehand oblique and isometric sketches.
 2. Construct auxiliary views of objects to determine true shape.
 3. Construct a plan and profile drawing of a sewer.
 4. Interpolate a grid of spot elevations from a contour drawing.
 5. Create a contour drawing given a grid of spot elevations.
 6. Interpret and draw a structural framing plan.
 7. Draw and interpret municipal services details.
 8. Input and plot simple drawings using AutoCad.
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III. TOPICS TO BE COVERED

1. Freehand sketching techniques
2. Constructing auxiliary views
3. Basic descriptive geometry
4. Spot elevations and contours
5. Plan and profile drawing
6. Structural framing drawings
7. Structural and municipal services detailing
8. CAD

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES

1.0 Freehand Sketching Techniques

- 1.1 Review orthographic, oblique and isometric views.
- 1.2 Discuss various pencil sketching techniques.
- 1.3 Draw freehand oblique and isometric sketches given orthographic views.

Resources: Handouts, Overheads
Drafting Equipment, 8.5X11 plain bond paper

2.0 Auxiliary Views and Basic Descriptive Geometry

- 2.1 Define auxiliary views.
- 2.2 Discuss procedure for constructing primary and secondary auxiliary views.
- 2.3 Construct auxiliary views of various objects given orthographic views.

Resources: Handouts, Drafting Equipment, 11 X 17 Vellum

3.0 Contours and Point Elevations

- 3.1 Review contours and contour interpretation.
- 3.2 Discuss use of point or spot elevations.
- 3.3 Construct a contour drawing given a grid of point elevations.
- 3.4 Develop and draft a grid of spot elevations given a contour drawing.

Resources: Plain White 8.5X11 Bond Paper, 2B Pencil, Drafting Equipment, 24 X 36 Vellum

4.0 Plan and Profile Drawing

- 4.1 Discuss uses of plan and profile drawings.
- 4.2 Construct and draft a plan and profile for a sewer or similar project.

Resources: Drafting Equipment, Technical Pen Set,
Preprinted 'Plan and Profile' Vellum.

5.0 Structural Framing Drawings

- 5.1 Discuss uses and interpretation of structural drawings.
- 5.2 Prepare a structural framing plan given a sketch.

Resources: 24X36 Mylar or Vellum, Drafting Equipment, Sketch Tissue, Blueline or Blackline Paper

6.0 Structural and Municipal Services Detailing

- 6.1 Discuss uses of structural and municipal services details.
- 6.1 Interpret structural details for a variety of construction types.
- 6.2 Draft structural framing details given sample details.
- 6.3 Draft municipal services details given sample details.

Resources: Handouts, 11 X 17 Vellum, Drafting Equipment

8.0 Computer Aided Drafting - Introduction and Overview

- 8.1 Discuss application of CAD in engineering.
- 8.2 Discuss CAD procedures in engineering drawing.
- 8.2 Review CAD lab rules and guidelines.
- 8.3 Discuss basic drawing and editing commands used in AutoCad.
- 8.4 Input and plot drawings using AutoCad.

V. METHOD OF EVALUATION

Students will be assigned a final grade based on successful completion of tests, assignments, projects and attendance, weighted as follows:

Drafting Assignments and Tests	50%
Major Drafting Assignment	20%
CAD Assignment	20%
Attendance	10%
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TOTAL	100

Assignments more than one week late will not be accepted. Attendance and punctuality will be considered in the student assessment. Absenteeism will not be tolerated. It is the student's responsibility to obtain notes, handouts and other materials missed due to absence.

A final letter grade will be assigned as follows:

A+	90-100%
A	80-89%
B	70-79%
C	55-69%
R	Repeat (Objectives have not been met)

VI. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult with the instructor. Credit for prior learning will be given upon completion of the following:

1. A portfolio of representative work including design and working drawings, that adequately demonstrates the following: technical drawing and drafting skill, basic CAD understanding, freehand sketching technique and drawing interpretation.
 2. Successful completion of a practical drafting and/or CAD test under the supervision of the instructor or the instructor's representative.
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VII. REQUIRED STUDENT RESOURCES:

Drafting Equipment Kit
Technical Pen Set
3 1/2" High Density Diskette

In addition to those materials provided in the kit, the student will be expected to supply various other media and materials necessary to complete the assignments and projects.

VIII. ADDITIONAL RESOURCES AND MATERIALS

There are available in the library a number of texts and periodicals on design, drafting, CAD, and engineering graphics:

Texts: (Reference Area)

Fundamentals of Engineering Drawing
Warren Luzadder
Surveying with Construction Applications
Barry Kavanagh

Texts: Manual on Metric Building Drawing Practice
National Research Council of Canada
Graphics for Engineers James H. Earle
Fundamentals of Engineering Graphics SI Metric
Cecil Jensen/Fred Mason
Engineering Drawing and Graphic Technology
Thomas French/Charles Vierck/Robert Foster
AutoCad and its Applications
Shumaker/Madsen

IX. SPECIAL NOTES

1. Students with special needs are encouraged to discuss required accommodations in confidence with the instructor.
 2. The instructor reserves the right to modify the course and course outline as deemed necessary to meet the needs of the students.
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X. COURSE ANALYSIS SHEET (ATTACHED)