SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON.

COURSE OUTLINE

COURSE TITLE: Drafting and Design

COURSE CODE: ARC 202

PROGRAM: Architectural Technology

SEMESTER: I (Fall)

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DATE: September 1994

PREVIOUSLY DATED: September 1992

APPROVED: _____ **DATE:** 94-08-24
(DEAN)

APPROVED: _____ **DATE:** Aug 24/94
(COORDINATOR)

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TOTAL CREDIT HOURS: 6
PREREQUISITES: ARC 113

I. PHILOSOPHY AND GOALS

This course is intended to introduce the student to commercial construction systems, with an emphasis on masonry and steel construction. The student will be introduced to the principles and applications of the requirements for building envelope details. The student will also refine design, detailing and drawing skills by completing presentation and working drawings for a small commercial building.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES)

1. Design a small commercial building given a site and a programme.
2. Draw details for a masonry cavity wall, applying the rainscreen principle.
3. Prepare presentation drawings using pen and ink.
4. Analyze conformance of a commercial building plan with Part 3 of the Ontario Building Code.
5. Construct and render a two point perspective using pen and ink.
6. Construct shade and shadow in a two point perspective.
7. Apply dimensioning techniques to masonry construction.
8. Draw a complete working drawing site plan, including grading.
9. Interpret and draw details for built-up and protected membrane roofs.
10. Understand the function and placement of air and vapour barriers.
11. Understand the principles of good detailing practices, including performance requirements.
12. Detail aluminium frame (curtain wall) window and glazing systems.

III. TOPICS TO BE COVERED

1. Masonry construction and the rainscreen principle.
2. Detailing and dimensioning masonry construction.
3. Detailing open web steel joist/steel deck systems.
4. Built-up and membrane roofing systems.
5. Presentation drawings for a commercial building using pen and ink.

6. Site design and landscape design.
7. Part 3 OBC, fire protection, fire rating, accessible design.
8. Working drawings for masonry construction.

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES

1.0 Masonry Construction

1.0 Review principles of heat and vapour flow through the building envelope.
1.1 Discuss materials and methods of masonry construction.
1.2 Define the rainscreen principle and its application in cavity wall construction.

Resources: Drafting Equipment, 11X17 Vellum
Architectural Details for Insulated Buildings
Prolegomenon pp. 2-11, Part 2 Chapters 1,2 and 3
Slides

2.0 Detailing and Dimensioning Masonry Construction

2.1 Examine detailing practices for masonry in working drawings.
2.2 Draw conventional and prototype masonry wall assembly details.
2.3 Analyze routing of air barriers and water protection through masonry assemblies.

Resources: Drafting Equipment, 11X17 Vellum
Architectural Details for Insulated Buildings
Detail Series A Brick Cladding pp. 15-35
Slides, Videos 'Skyscaper' Series

3.0 Detailing Open Web Steel Joist/Steel Deck Systems

1.4 Draw details of steel joist/deck and masonry wall interfaces.
1.5 Draw details of steel joist/deck and structural steel interfaces.

Resources: Drafting Equipment, 11X17 Vellum
Architectural Details for Insulated Buildings
Details A4,A5 and A6
Slides, Videos 'Skyscaper' Series

4.0 Built-up and Membrane Roofing Systems

4.1 Examine the theory of built-up, inverted and membrane roofing systems.
4.2 Look at conventional details of roofing systems.
4.3 Draw details of different types of roofing assemblies.
4.3 Design roof drainage systems.

Resources: Drafting Equipment, 11X17 Vellum
Architectural Details for Insulated Buildings
Part 2 Chapter 3,6 and 7
Detail Series A

5.0 Presentation Drawings for a Commercial Building

5.1 Review of two point perspective drawing.
5.2 Draw and render presentation drawings in pen and ink.
5.3 Construct shade and shadow in two point perspective.

Resources: Drafting Equipment, 24X36 Vellum
Handouts, Overheads

6.0 Site and Landscape Design

6.1 Understand and apply principles of site planning.
6.2 Understand and apply applicable regulations and by-laws to the design and planning process.
6.3 Examine landscape design and plant materials.
6.4 Examine and apply principles of windflow and snowdrifting to site design.

Resources: Drafting Equipment, 24X36 Vellum
Handouts, Overheads
Guest Lecture (subject to confirmation)

7.0 Part 3 OBC, Fire protection, Fire rating, Accessible design.

7.1 Apply Part 3 regulations to the planning and design of a small commercial building.
7.2 Distinguish between fire separations and fire rated assemblies.
7.3 Discuss the concept of limiting distance and perform sample calculations.

7.4 Examine the requirements of Section 3.7 and the site and building design implications.

Resources: Drafting Equipment, 24X36 Vellum
Handouts, Overheads
Ontario Building Code

8.0 Working Drawings for Masonry Construction

8.1 Organize and prepare thumbnail sketches of drawing layout.
8.2 Draw wall, aluminum window and roof details for a masonry and steel joist/steel deck assembly.
8.3 Draw plans, sections, elevations and site plan for a small commercial building.
8.4 Fully dimension a floor plan for a masonry building.
8.5 Apply notes and references to working drawing plans and details.

Resources: Architectural Details for Insulated Buildings
Chapters 5,6 and 7
Drafting Equipment, 24X36 Vellum
Handouts, Overheads

V. METHOD OF EVALUATION

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

Design and Code Drawings	15%
Working Drawings	20%
Perspective	5%
Detail Assignments	35%
Other Tests and Assignments	15%
Attendance	10%
TOTAL	**100%**

Late assignments will be penalized 10% for each day late. Attendance and punctuality will be considered in the student assessment.

A final letter grade will be assigned as follows:

A+	90-100%
A	80-89%
B	70-79%
C	55-69%
R	Repeat

VI. PRIOR LEARNING ASSESSMENT

Students who wish to apply for advance credit in the course should consult the instructor.

VII. REQUIRED STUDENT RESOURCES

Architectural Details for Insulated Buildings
Ronald Brand
Van Nostrand Reinhold

Architecture: Design Engineering Drawing
Latest Edition
William P. Spence
Glencoe

Ontario Building Code
Ministry of Housing
1990

Architectural Drafting Equipment Kit

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

Architectural Graphic Standards
Ramsey/Sleeper
Latest Edition
John Wiley & Sons
Architectural Graphics
Francis Ching
Van Nostrand/Reinhold

Manual on Metric Building Drawing Practice
National Research Council of Canada

There are available in the library a number of texts and periodicals on design, drafting and construction.

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.