

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: DRAFTING & DESIGN

Code No.: ARC 212-5

Program: ARCHITECTURAL TECHNICIAN

Semester: IV

Date: JUNE, 1984

Author: M. URSELL

New: \_\_\_\_\_ Revision: X

APPROVED: *L.P. Crozitto* \_\_\_\_\_  
Chairperson Date

CALENDAR DESCRIPTION

DRAFTING & DESIGN

ARC 212-5

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Course Name

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Course Number

PHILOSOPHY/GOALS:

To complete a set of working drawings for a small commercial or industrial building all architectural plans and details plus schedules and structural drawings.

METHOD OF ASSESSMENT (GRADING METHOD):

SEE ATTACHED SHEET

METHOD OF ASSESSMENT (all courses)

The following grades will be assigned:

A - 75 - 100%	consistently above average achievement
B - 66 - 74%	average achievement
C - 55 - 65%	satisfactory achievement
I - incomplete	
R - Repeat	the student has failed to achieve the objectives of the course and must repeat the course.

The "I" grade (incomplete) designation indicates that the student has not completed the objectives required in specific course areas.

Semester work will be made up of formal tests and assignments. All tests and assignments must be completed when assigned. Late assignments or projects will not be tolerated.

Attendance is also mandatory in all classes.

Tests and assignments will be given on a regular basis throughout the semester. The weighted grade between practical theoretical work will depend on the type of course. Final examinations are also mandatory for any student that does not maintain an "A" average in the course or who has not completed all assignments by their due date.

NOTE: Chronic absenteeism by any student will result in the student not being admitted to class and ultimately his failure to receive an acceptable grade in the course.

ARCHITECTURAL TECHNICIAN

ARC 212-5

TEXTS:

Architecture - Design Engineering & Drawing - by W.P. Spence  
Publisher: McKnight & McKnight

Student Workbook for the above

Timber Design Manual - by the Canadian Wood Council

Design of Reinforced Concrete - by McCormac  
Publisher: Harper & Row

REFERENCE TEXTS:

Building Construction Handbook - by Merritt (McGraw-Hill)

Manual on Metric Building Drawing Practices - by National Research Council

Architectural & Building Trades Dictionary - by Burke Dalsell Townshed  
(General)

Masonry Simplified - by Dalsell Townshed (General)

Modular Co-ordination - by R.S. Kent - National Research Council

Architectural Graphics - by Martin (Macmillan)

Architectural Rendering - by Halse (McGraw-Hill)

Canadian Wood Council Publications

Student Manual Technical Notes and Details in S.I.

Legal Aspects of Architectural Practice O.A.A.

G.M.S. Master Construction Specifications - Canadian Government

The Ontario Building Code

Architectural Graphic Standards

Essentials of Soil Mechanics & Foundations - by David F. McCarthy (Reston)

Concrete Detailing (A.C.I.)

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1.	12	<u>Floor &amp; Roof Systems</u> <ol style="list-style-type: none"> <li>a) One-way reinforced concrete roof and floor slabs, design and detail</li> <li>b) Two-ways reinforced concrete slabs</li> <li>c) Flat slab construction</li> <li>d) Prefab concrete roofs and floors of concrete, steel, etc.</li> <li>e) Steel and wood roof decks</li> <li>f) Built up roofing - details and specifications</li> </ol>
2.	6	<u>Walls-Design &amp; Detail</u> <ol style="list-style-type: none"> <li>a) Masonry terminology</li> <li>b) Solid masonry walls-design requirements</li> <li>c) Details of solid masonry walls</li> <li>d) Cavity walls-design requirements</li> <li>e) Details of cavity walls</li> <li>f) Expansion points in masonry walls</li> <li>g) Bearing capacities</li> <li>h) Flexible anchorage of masonry walls to structural steel</li> </ol>
3.	6	<u>Custom Details</u> <ol style="list-style-type: none"> <li>a) Commercial door and window details</li> <li>b) Stair details and layout</li> <li>c) Finish schedules</li> <li>d) Cabinets, counters, etc.</li> <li>e) Glass-types, manufacture of, and applications</li> <li>f) Door and window hardware</li> </ol>
4.	8	<u>Timber Framing</u> <ol style="list-style-type: none"> <li>a) Laminated beam and arch design and detail</li> <li>b) Details</li> <li>c) Applications</li> <li>d) Post and beam design and detail</li> <li>e) Timber trusses</li> </ol>
5.	34	<u>Working Drawings of a Small Commercial Institutional or Industrial Building</u> <ol style="list-style-type: none"> <li>a) Foundation plans</li> <li>b) Floor plans</li> <li>c) Elevations</li> <li>d) Building sections and details</li> <li>e) Structural plans</li> </ol>

- f) Electrical plans
- g) Mechanical plans
- h) Room, door and window schedules

ARCHITECTURAL TECHNICIAN IV

Drafting & Design

ARC 212-5

The main objective of this course is to prepare the student for employment as an architectural draftsman or any of the other related fields as outlined in the official college calendar.

The objectives that the student shall be responsible for in this course:

UNIT 1:

1. To identify a one-way reinforced concrete suspended slab.
2. To identify a two-way reinforced suspended slab.
3. To design a one-way reinforced suspended slab manually and with the aid of the microcomputer.
4. To detail a one-way reinforced suspended slab.
5. To identify a suspended reinforced concrete flat slab.
6. To identify a suspended reinforced concrete ribbed slab.
7. To identify and detail various commercial flooring systems such as:
  - a) pre-cast concrete
  - b) metal decking
  - c) Steel decking, etc.
8. To identify and detail various commercial roof systems such as:
  - a) light weight concrete
  - b) metal decking
  - c) wood decking
  - d) tile & concrete
9. To identify the various commercial roofing material such as:
  - a) rigid urethane foam.
  - b) riber board insulation
  - c) flashing
  - d) built-up roofing materials, etc.
10. To detail a typical built-up roof facia.
11. To detail a typical built-up roof expansion joint.
12. To detail a typical built-up roof storm drain.

## UNIT 2:

1. To select the N.B.C. regulations used in the design of solid masonry walls such as height, bearing and lateral support.
2. To identify and detail a cavity wall.
3. To select the N.B.C. regulations used in the design of cavity walls.
4. To learn the application of , and the detail of, expansion and control joints in masonry wall and floor construction.
5. To identify and detail various commercial curtain wall systems.
6. To design and detail a custom curtain wall system, or
7. To compare the various wall systems as to:
  - a) fire rating
  - b) flexibility
  - c) economics of construction
  - d) sound transmission
  - e) thermal characteristics
  - f) bearing capacity
  - g) architectural design

## UNIT 3:

1. To identify and detail various commercial and custom doors.
2. To identify and detail various commercial and custom windows.
3. To identify and detail various stair types such as:
  - a) spiral
  - b) L-shaped
  - c) straight run
  - d) narrow "V"
  - e) winder
4. To identify and construct a room finish schedule for a commercial or industrial building.
5. To identify and detail cabinets, counters and other interior millwork.
6. To identify various glass types used in architecture.
7. To identify the various manufacturing processes for glass.



UNIT 4:

1. To design and detail a glue laminated beam manually and with the aid of the microcomputer.
2. To identify the manufacturing procedure for glue laminated timber products.
3. To design a laminated timber tudor arch.
4. To layout & detail a laminated timber arch.
5. To identify the various timber trusses used for commercial and industrial applications.
6. To identify the principles and characteristics of post and beam construction.
7. To identify the types of posts and beams.
8. To investigate the structural requirements for post and beam construction.
9. To design and detail timber plank decking.
10. To design and detail solid wood posts.
11. To design and detail laminated wood posts.
12. To identify the procedures used and the requirements for fire treated wood.
13. To identify and compare the uses of various types of cedar shakes and cedar shingles.
14. To detail heavy timber construction for industrial buildings.
15. To identify plywood data for designers.
16. To identify the building code regulations governing the uses of plywood.

All of the above specific and general objectives are to be completed in conjunction with one main objective of this course as follows:

UNIT 5:

1. A complete set of working drawings for a small commercial, industrial or institutional building which shall include:
  - a) all foundations plans
  - b) all floor plans
  - c) all elevations (exterior)
  - d) all elevations (interior)
  - e) building sections and details
  - f) structured plans (concrete and steel)
  - g) electrical layout plans
  - h) mechanical plans (plumbing, etc.)
  - i) room schedules
  - j) window and door schedules
  - k) a title page
  
2. To convert working drawing dimensions.