

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

COURSE OUTLINE

Course Title: DRAFTING & DESIGN
Code No.: ARC 202-5
Program: ARCHITECTURAL TECHNICIAN
Semester: III
Date: JUNE, 1984
Author: M. URSELL

New: _____ Revision: X

APPROVED:

J.P. Proietto
Chairperson

Date

DRAFTING & DESIGN
Course Name

ARC 202-5
Course Number

PHILOSOPHY/GOALS

To develop presentation techniques.

To understand and relate to others PART 3 of the Ontario Building Code.

To design foundation units manually and with the aid of the microcomputer.

To design for function and aesthetics a small commercial or institutional building.

METHOD OF ASSESSMENT

SEE ATTACHED SHEET.

TEXT:

- Architecture - Design Engineering & Drawing - by Spence
Publisher, McKnight & McKnight
Student Workbook for the above
- A Graphic Vocabulary for Architectural Presentation -
by Edward T. White
- Architectural Technical Notes & Detail Manual
- Fire Protective Designs - Canadian Wood Council

REFERENCE TEXTS:

- Architecture - Realization Through Planning - by G.H. Anthony
- Manual on Metric Building Drawing Practices - by National Research Council
- Building Construction Handbook - by Merritt (McGraw-Hill)
- Architectural & Building Trades Dictionary - by Burke Dalsell Townshed
- (General)
- Architectural Graphic Standards - by Ramsay & Sleeper (General)
- Technical Notes on Brick & Tile - by Canadian Brick & Tile Assoc.
- Modular Co-ordination - by R.S. Kent - National Research Council
- Ontario Building Code
- Canadian Wood-Frame Construction Handbook - by C.M.H.C.
- Ordering Systems - by Edward T. White (Architectural Media)

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.

DRAFTING & DESIGN

ARC 202-5

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
1.	60	<u>Presentation Techniques & Drawing</u> a) Introduction to presentation drawings b) General specifications for presentation drawing project. c) Preliminary sketches d) General arrangement plans e) Interior & exterior elevations f) Sections g) Site plan analysis h) Two-point & one-point perspective techniques i) Shadow construction methods j) Pencil rendering techniques k) Architectural model construction l) Feasibility studies m) Types of architectural firms	
2.	20	<u>Ontario Building Code</u> a) Definitions b) Use & occupancy c) Classifications of major occupancies d) Fire ratings & regulations e) Fire Protection Design	
3.	16	<u>Foundation Details & Design</u> a) Types of footings b) Design of wall footings c) Footing details S.I. d) Reference column grid lines e) Reinforced concrete foundation wall details S.I. f) Reinforcing steel detailing g) Reinforcing steel bar schedules h) Reinforced concrete retaining walls	
4.	10	<u>S.I. Linear Dimension Problems related to Student Projects</u>	

ARCHITECTURAL TECHNICIAN 3

ARC 202-5

Performance Objectives:

The general objective of this course is to train the student in architectural drafting and design, step by step, from a basic building concept to the finished presentation drawings. The student completing this course is prepared to enter the next semester of the Architectural Technician Program.

UNIT 1

1. To be able to identify the Role of the Architect.
2. To be able to identify and relate to others the different types of contemporary Architectural Practices and Services.
3. To compare the various architectural firms as to their function and to be able to construct a flow chart for each.
4. To identify the requirements for a feasibility study.
5. To carry out a feasibility study for their own Architectural Presentation Project.
6. To identify the requirements for a "Site Analysis" Natural and Cultural.
7. To identify the various types of "Land Use Plan".
8. To carry out a research report for a "Land Use Plan".
9. To identify various "Vehicular Circulation Patterns" used in contemporary town planning.
10. To apply the proper sight distances, road widths and intersection intervals to town plans.
11. To identify the requirements for proper parking facilities.
12. To apply the design points used in the design of parking lots.
13. To identify the terminology used for grading and earth work calculations.
14. To construct proposed site contours at a predetermined grade.
15. To construct a site drainage plan.

16. To review and identify the principles of isometric and oblique drawings.
17. To construct a two-point perspective.
18. To identify the material mediums used for Architectural Renderings.
19. To identify and apply tone, value and hue to Architectural Renderings.
20. To identify the methods of shade and shadow construction.
21. To solve shade and shadow problems for paraline drawings.
22. To solve shade and shadow problems for perspective drawings.

UNIT 2 - ONTARIO BUILDING CODE

23. To identify the terminology and regulations governing "Use and Occupancy" in the National Building Code and the Ontario Building Code.
24. To identify the various building systems for class A,B,C, and D buildings that are acceptable for fire ratings and acoustics.
25. To identify the OBC requirements for exits and means of egress.
26. To identify the OBC requirements for ventilation.
27. To identify the OBC minimum areas for rooms in the classification of buildings by major occupancies.
28. To identify the minimum heights of rooms in the classification of buildings by major occupancies.
29. To identify various foundation types.
30. To design an unreinforced concrete wall footing.
31. To design and detail a reinforced concrete wall footing in S.I.
32. To construct a reinforcing steel bar list.
33. To select and detail reinforced concrete retaining walls in S.I.
34. To identify the "General Requirements" for "Fire Protective Design".
35. To define non-combustible Construction.
36. To define combustible construction.
37. To determine the degree of fire protection attained by heavy timber construction.
38. To identify permitted combustible materials.

39. To determine "Fire Resistance Rating".
40. To explain "Alternate Determination".
41. To define "Fire Wall".
42. To explain "Fire Compartment".
43. To determine the fire ratings of various types of closures and partitions.
44. To define "Fire Stopping".
45. To identify the materials used for fire stops.
46. To determine "Flame Spread Rating".
47. To explain the reasons for using "Flame Ratings".
48. To identify the test apparatus to determine flame spread rating.
49. To determine "Occupant Load".
50. To determine "Building Size".
51. To explain how "Building Size Requirements" influence building designs.
52. To define "Fire Treated Wood".
53. To explain the chemicals used for fire retardent applications.
54. To determine the two main types of roof coverings.
55. To explain safe access facilities.
56. To identify interior finish as classified for fire protective design.
57. To explain an "open finish".
58. To identify the "flame spread rating" of different types of interior finish.
59. To recognize the design criteria governing:
 - a) assembly occupancies
 - b) institutional occupancies
 - c) residential occupancies
 - d) exits
 - e) industrial occupancies
60. To identify "General Exit Requirements".

61. To determine Fire Door ratings and selection requirements.
62. To identify the different types of foundation soils.
63. To identify the bearing capacities of various foundation soils.
64. To select the information required on drawings for foundations.
NOTE: All the specific objectives listed this far must be correlated for the student to fulfill the two major objectives of this course.
They are as follows:
65. To construct a complete set of presentation drawings for a small commercial or institutional building.
66. To construct a structural model for a building component system.
OR
67. To construct an architectural model for building and site.
68. To solve S.I. linear problems for floor plans, details & site plans.

UNIT 3 - FOUNDATIONS

69. To identify and relate to other foundation terminology.
70. To recognize major soil types.
71. To describe a soil type.
72. To identify and know the bearing capacity and settlement of various types of foundation beds.
73. To identify the information required on foundation drawings.
74. To understand and relate to others the special problems associated with shallow foundation designs.
75. To determine wet density, dry unit weight, void water and water content for a soil sample.
76. To review the various types of foundations.
77. To identify a one-way reinforced concrete footing.
78. To identify a two-way reinforced concrete footing.
79. To design a one-way reinforced concrete footing by the "Working Stress Method" with the electronic calculator and on the microcomputer.

80. To design a one-way reinforced concrete footing by the "Strength Method" with the aid of the electronic calculator and on the micro-computer.
81. To identify a reinforced concrete independent footing.
82. To design a reinforced concrete independent footing manually and with the aid of the microcomputer using the "Working Stress Method".
83. To repeat question #82 using the new "Strength Method" of reinforced concrete design.
84. To identify a combined footing.
85. To detail the above footing types to code regulations.
86. To identify a grillage foundation.
87. To identify the various types of pile foundations.
88. To identify the basic pile driving equipment.
89. To determine the load carrying capacity of a pile by the use of appropriate formulas.