

ARC 202-5

SAULT COLLEGE
of Applied Arts and Technology
Sault Ste. Marie

COURSE OUTLINE

DRAFTING & DESIGN
ARC 202-5

revised September, 1981 by M. Ursell

ARCHITECTURAL DRAFTING

THIRD & FOURTH SEMESTERS

Introduction

Architecture is the science, art and business of building the enclosure of space for human occupancy, so that the structure is suited to its purpose. The purpose of this course, then, is to teach the student to make use of scientific facts, engineering principles and material sources to achieve proper drafting ability and good drafting procedure habits.

The course is designed to guide the student of architectural drafting, step by step, from rough idea to finished drawing. It presents the basic subject matter, clarifies the order of development, and explains drafting techniques involved in the process of architectural drawing.

ARCHITECTURAL DRAFTING

ARC 210-7

TEXT:

Architecture - Design Engineering & Drawing by W. P. Spence
- Publisher McKnight & McKnight
- Architectural Graphics by Martin
- Publisher MacMillan

Architectural Technology - Obermeyer
- McGraw-Hill Publishers

Architectural Technical Notes & Detail Manual

REFERENCE TEXTS:

Architecture - Realization Through Planning
- by G. H. Anthony

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)

Architectural Graphic Standards - by Ramsay & Sleeper (General)

Masonry Simplified - by Dalsell Townshed (General)

Manual of Masonry Construction - by Cooksville-Laprarie Brick Ltd.

Technical Notes on Brick & Tile - by Canadian Brick & Tile Association

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

Simplified Engineering for Architects & Builders - by H. Parker

Ontario Building Code

Canadian Wood-Frame Construction Handbook by C.M.H.C.

Topic Number	Periods	Topic Description	Reference
1	60	<u>Presentation Techniques & Drawings</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	30	<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	20	<u>Floor & Roof Systems</u> a) One way reinforced concrete roof and floor slabs, design and detail b) Two-way reinforced concrete slabs c) Flat slab construction d) Prefab concrete roofs and floors of concrete, steel, etc. e) Steel and wood roof decks f) Built up roofing - details and specifications	
5	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

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 Spread 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.

UNIT 3

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 4

69. To identify a one-way reinforced concrete suspended slab.
70. To identify a two-way reinforced suspended slab.
71. To design a one-way reinforced suspended slab.
72. To detail a one-way reinforced suspended slab.
73. To identify a suspended reinforced concrete flat slab.
74. To identify a suspended reinforced concrete ribbed slab.
75. To identify and detail various commercial flooring systems such as:
 - a) pre-cast concrete
 - b) metal pan
 - c) steel decking, etc.
76. To identify and detail various commercial roof systems such as:
 - a) light weight concrete
 - b) metal decking
 - c) wood decking
 - d) tile & concrete, etc.
77. To identify the various commercial roofing material such as:
 - a) rigid urethane foam.
 - b) fiber board insulation
 - c) flashing
 - d) built-up roofing materials, etc.
78. To detail a typical built-up roof facia.
79. To detail a typical built-up roof expansion joint.
80. To detail a typical built-up roof storm drain.