

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

COURSE OUTLINE

Course Title: ARCHITECTURAL ENGINEERING III  
Code No.: ARC 205  
Program: ARCHITECTURAL TECHNICIAN (DRAFTING)  
Semester: IV  
Date: JUNE, 1983  
Author: G. FRECH

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

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

ARCHITECTURAL ENGINEERING III  
Course Name

ARC 205  
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PHILOSOPHY/GOALS:

The student will have a basic knowledge in the design of light framing and the use of structural tables. He/she will be able to design simple structures in skeleton frame using steel and wood.

METHOD OF ASSESSMENT (GRADING METHOD):

A - 86 - 100%  
B - 70 - 85%  
C - 55 - 69%  
R - Repeat  
X - Work to be upgraded or new work assigned

- Marks will be accumulated and averaged using tests and assignments
- Final testing will be given students not achieving 75% average with no failures or 80% average with one failure 50-54% average.
- Attendance, lateness and attitude will be considered in assessment.

TEXTBOOK(S):

CISC Steel Handbook

CISC Drafting Fundamentals

Applied Strength of Materials

ARCHITECTURAL ENGINEERING III

ARC 205

<u>TOPIC NO.</u>	<u>PERIOD</u>	<u>TOPIC DESCRIPTION</u>	<u>REFERENCE</u>
1.	12	<u>Beam Design - Steel/Wood</u> <ul style="list-style-type: none"><li>- Loading</li><li>- Design loads</li><li>- Wall plates</li><li>- Crippling</li><li>- Shear</li><li>- Deflection</li></ul>	
2.	8	<u>Column Design</u> <ul style="list-style-type: none"><li>- Axial loading</li><li>- Column design, steel/wood</li><li>- Base plans</li></ul>	
3.	4	<u>Connections</u> <ul style="list-style-type: none"><li>- Tables</li><li>- Headers</li><li>- Seats</li></ul>	
4.	8	<u>Clearance &amp; Interference</u> <ul style="list-style-type: none"><li>- Standard clearance</li><li>- Standard guages</li><li>- Copes</li></ul>	
5.	8	<u>Drawings</u> <ul style="list-style-type: none"><li>- Grid system</li><li>- Details</li><li>- Notes</li><li>- Schedules</li></ul>	
6.	24	<u>Trusses</u> <ul style="list-style-type: none"><li>- Stress diagrams</li><li>- Bow's notation</li><li>- Member design</li><li>- Panel points</li><li>- Splices</li><li>- Smoleys tables</li></ul>	

## SPECIFIC OBJECTIVES

### ARC 205

#### Beam Design - Steel & Wood

1. Identify loading
2. Calculate design loading
3. Flexure formula
4. Beam design - steel
5. Beam design - wood
6. Design wall plates
7. Design for crippling
8. Design for shear
9. Design for deflection

#### Column Design

1. Identify columns under axial load
2. Identify K factor
3. Calculate least radius of gyration
4. Identify short, medium and long columns
5. Know rules for column design and apply
6. Design simple steel column base plates
7. Identify columns in wood for l/d range
8. Use tables for steel and wood from handbooks

#### Connections

1. Standard types
2. Special types
3. CISC tables

#### Clearance & Interference

1. Identify standard clearance and interference
2. Identify and calculate copes
3. Identify standard connection symbols

### Drawings

1. Identify grid systems and their purpose
2. Identify and read column schedules
3. Identify and draw special details
4. Apply the information to student drawing projects

### Trusses

1. Use Bow's notation
2. Draw and scale truss stress diagrams
3. Determine members in tension or compression
4. Calculate stresses in panel points mathematically
5. Use Smoley's tables
6. Calculate shop clearances
7. Calculate connector requirements