SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: THEORY OF STRUCTURES

Code No.: CIV 300-5

Program: CIVIL ENGINEERING TECHNOLOGY

Semester: FIVE

Date: JUNE, 1984

Author: W. R. DAVIES

New: X Revision: _____

APPROVED: _____ _____

Chairperson Date

THEORY OF STRUCTURES
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PHILOSOPHY/GOALS:

"To present to the student of Engineering, a general outline of the theories upon which the design of structures is based."

A.J.S. Pippard
J. Baker
1936

REFERENCE TEXTBOOKS:

Elementary Structural Mechanics - AV

Structural Theory - Sutherland

Theory of Simple Structures - Stedd & Yawer

Analysis of Engineering Structures - Pippard & Baker

THEORY OF STRUCTURES

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1	6	Review: (a) Mathematics: Simple differentiation and first order integration (b) Statics: Equilibrium, force analysis of structures (c) Strength of Materials: Stress, strain elasticity, shear and bending in beams
2	6	Stresses in Beams: Theory of simple bending Deflection of beams Simply supported and encastre beams with point and uniformly distributed loads Principle of superposition
3	8	Displacement of Elastic Bodies: Strain energy Castigliano Theorems I & II Displacement of beams by strain energy Reactions in continuous beams Williott Mohr diagrams
4	4	Redundant Frames: Single redundancy Multi redundancy Relaxation methods
5	8	Struts and Laterally Loaded Columns & Tie: Struts general Slender columns Strut formulae Pin jointed and encastre struts Laterally loaded struts
6	8	Continuous Beams: General problem Wilson's method Three movement theorem Continuous column

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
7	6	Frames with Stiff Joints: Strain energy analysis Slope defection analysis Moment distribution method
8	4	Elastic Arches: Arch action Three pinned arch Segmental arch Point and distributed loads
9	2	Suspension Bridges: Cables Gurders Influence lines
10	4	Influence Lines for Statically Determinate Structures: Deflections Shearing forces Bending moment
11	4	Earth Pressure Structures: General Active and passive pressure Wedge theory Effect of deformation on pressure
12	4	Plastic Theory: Single beam Continuous beam Portal frame
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