

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: MECHANICS OF MATERIALS

CODE NO. : MCH 2120 **SEMESTER:** 3

PROGRAM: CIVIL/CONSTRUCTION

AUTHOR: KARL UCHMANOWICZ

DATE: SEPT. **PREVIOUS OUTLINE DATED:**
2002

APPROVED:

DEAN

DATE

TOTAL CREDITS: 4

PREREQUISITE(S): MCH 1100

HOURS/WEEK: 4

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For additional information, please contact
School of Technology & Natural Resources
(705) 759-2554, Ext. 485

I. COURSE DESCRIPTION:

The objective of this course is to introduce the student to the principles and methods of analyzing, how construction materials behave and react when forces are applied.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Confidently use engineering units.

Potential Elements of the Performance:

- Solve selected unit problems and conversions.

2. Review of statics

Potential Elements of the Performance:

- Use trig and algebra to solve force vectors
- Solve moment force problems
- Sketch and analyze free body diagrams
- Solve truss problems

3. Understand and identify types of stress

Potential Elements of the Performance:

- Discuss, and with the use of problems, identify types of simple stress. Eg. Tension, compression, shear, bearing, thermal.

4. Gain knowledge and understanding of the mechanical properties of common construction materials.

Potential Elements of the Performance:

- Solve problems dealing with physical and mechanical properties.
- With the use of problem sets, verify, stress –strain relationships.

5. Identify and have a basic understanding of the selection and use of structural connections.

Potential Elements of the Performance:

- Discuss welded, bolted, pinned, adhesive connections.
- Solve varied problems finding strength of connections.

6. Gain skills in finding centroids and moments of inertia.

Potential Elements of the Performance:

- Find centroids of areas and shapes.
- Solve problems to find center of gravity.
- Develop charts to solve for moments of inertia of various construction shapes.

7. Understand the stress that occurs in simple beams by various loads.

Potential Elements of the Performance:

- Recognize beam loading and support types.
- Draw shear force diagrams.
- Draw bending moment diagrams.
- Solve for bending stress and shear stress.

III. TOPICS:

1. Introduction - units
- conversions
2. Review
3. Stress
4. Properties of materials
5. Connectors
6. Centroids, moments of inertia
7. Simple beams

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Statics and strength of Materials - edition 4

(BASSIN/ BRODSKY/ WOLKOFF)

V. EVALUATION PROCESS/GRADING SYSTEM:

Term Tests	65%
Final Test	25%
Labs or Assignments	10%

Test -- three term tests
 -- one week notice

Labs -- as equipment and time permits
 -- mandatory

Note: No re-writes will be allowed

The following semester grades will be assigned to students in post secondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see <i>Policies & Procedures Manual – Deferred Grades and Make-up</i>).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.	

VI. SPECIAL NOTES:Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.

