A POLYTECHNIC INSTITUTION

School of Manufacturing & Industrial Mechanical
Program: Mechanical and Plastics Engineering

Option: Mechanical Core

Course Outline

MECH 2240
Strength of Materials

Start Date:	January 2006				**End Date:**	May 2006			
Total Hours:	4	**Total Weeks:**	20		**Term/Level:**	2	**Course Credits:**	5.5	
Hours/Week:	4	**Lecture:**	2	**Lab:** 2	**Shop:**		**Seminar:**		**Other:**

Prerequisites

Course No.	Course Name
MECH 1141	Engineering Mechanics 1

MECH 2240 is a Prerequisite for:

Course No.	Course Name
MECH 3340	Machine Design 1
MECH 3345	Computer Aided Engineering
MANU 3314	Tool Design
MANU 3316	Advanced Materials
PLAS 3340	Plastics Design

v Course Description

This course provides a comprehensive coverage of important topics in strength of materials with emphasis on problem solving, applications and design of structural members, mechanical devices and systems. Subjects covered are stress, strain and deflection, tension, compression, shear, torsion, deflection and buckling of material under a load. Beams, columns, shafts, thin and thick-walled cylinders are considered.

v Evaluation

Assignments	10%	Comments:
2 Midterm Exams	each 20%	exams are open text book and one 81/2 by 11 formula sheet is allowed. Notes and other books are **not** allowed
Final Exam	50%	
TOTAL	100%	

v Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

- Understand and solve problems involving analysis / design of structural members
- Calculate deflections, forces and stresses in machine components particularly beams.
- Calculating appropriate sizes of structural members under loads.
- Determining buckling load for a column.
- Determine the wall thickness in a pressure vessel.

v Verification

I verify that the content of this course outline is current.

Kaveh Rikfatuat — Authoring Instructor — Jan 11, 2006 — Date

I verify that this course outline has been reviewed.

Program Head/Chief Instructor — Jan 11/06. — Date

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean — 2006/01/11 — Date

Note: Should changes be required to the content of this course outline, students will be given reasonable notice.

v Instructor(s)

Koorosh Nikfetrat **Office Location:** SW-9 202 **Office Phone:** (604) 451-6829
Office Hrs.: As posted **E-mail Address:** koorosh_nikfetrat@bcit.ca

v Learning Resources

Required: Applied Strength of Materials by R. Mott, Prentice Hall Publishing

Recommended:

v Information for Students

Note: **Please refer to BCIT policy number 5002, Student Regulations Policy, for additional information. Policies are available at http://www.bcit.ca/about/administration/policies.shtml.**

Ethics: BCIT assumes that all students attending the institute will follow a high standard of ethics. Incidents of cheating or plagiarism may, therefore, result in a grade of zero for the assignment, quiz, test, exam or project for all parties involved and/or expulsion from the course.

Assignments: Assignments, lab reports or projects must be done on an individual basis unless otherwise specified by the instructor. Late assignments, lab reports or projects will be devalued 10% per day late to a maximum of 3 days late.

Makeup Tests, Exams or Quizzes: There will be **no** makeup tests, exams or quizzes. If you miss a test, exam or quiz, you will receive zero marks. Exceptions may be made for **documented** medical reasons or extenuating circumstances. In such a case, it is the responsibility of the student to inform the instructor **immediately**.

Attendance: The attendance policy as outlined in BCIT Policy 5002 will be enforced. Attendance will be taken at the beginning of each session. Students not present at that time will be recorded as absent.

Illness: If you miss an evaluation such as an assignment, quiz, exam, or project, or you miss 3 or more consecutive days of class, you must provide the department with a BCIT Student Medical Certificate (available at http://www.bcit.ca/admission/downloads.shtml).You may be asked to complete the work that you missed or the course evaluation may be adjusted to reflect the missed component(s).

Attempts: Students must successfully complete a course within a maximum of three attempts. Students with two attempts in a single course must get written permission from the Associate Dean to attempt the course for the third time. Students who have not successfully completed a course within three attempts will not be eligible to graduate from the program.

Advancement: Students who fail three or more courses in a term cannot advance to the next term and may be asked to discontinue from the program.

Course Outline Changes: The material or schedule specified in this course outline may be changed by the instructor. If changes are required, they will be announced in class.

v Assignment Details

Tentative Schedule

Week of/ Number	Outcome/Material Covered	Reference/ Reading	Assignment	Due Date
1	Direct normal and shear stress and strain			
2	Material properties, Design of members under direct stress			
3	Axial deformation and thermal stress			
4	Torsion			
5	Shear and bending moment for beams			
6	Shear and bending moment for beams Centroids and moments of inertia			
7	Centroids and moments of inertia Review for midterm exam			
8	Midterm exam			
9	Normal stress due to bending			
10	Spring break			
11	Shear stress due to bending			
12	Combined stresses			
13	Mohr's circle			
14	Midterm exam			
15	Deflection of beams			
16	Statically indeterminate beams			
17	Columns			
18	Pressure vessels			
19	Review			
20	Final exams			