



POLYTECHNIC INSTITUTION

Course Outline

School of: Manufacturing, Electronics and Industrial Processes
Program: Mechanical Technologies, Plastics Technology
Option: Common Core

MECH 2240
Strength of Materials

Start Date:	September 2006			End Date:	December 2006		
Total Hours:	66	Total Weeks:	11	Term/Level:	2	Course Credits:	5.5
Hours/Week:	6	Lecture:	3	Lab:	3	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

■ **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. Topics include: stress, strain and deflection, tension, compression, shear, torsion, and buckling. Application to beams, columns, shafts, thin and thick-walled cylinders are considered.

■ **Evaluation**

Quizzes	10 %	Comments: Exams are open textbook with one 8.5 by 11 aid sheet. A Sharp EL520 Calculator is also permitted. No other books, notes or aids will be permitted into the examination.
Midterm Exam	35 %	
Final Exam	55 %	
TOTAL	100 %	

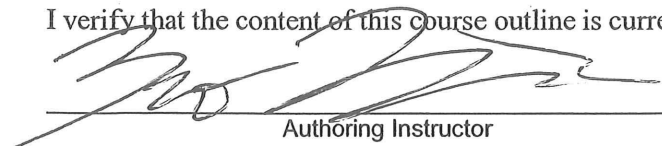
■ **Course Learning Outcomes/Competencies**

Upon successful completion of this course the student will be able to:

- Employ stress concentration factors and use design safety factors.
- Compute shear stress due to torsion.
- Calculate deflections, forces and stresses in machine components particularly beams.
- Use Mohr's circle to combine plane stresses and find maximums.
- Calculating appropriate sizes of structural members under loads.
- Determining buckling load for a column.
- Analyse stresses in cylindrical pressure vessels.

■ Verification

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

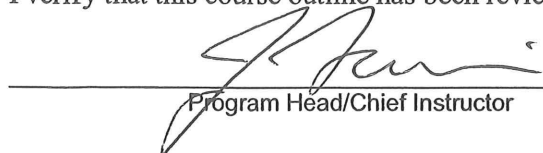


Authoring Instructor

Aug 25, 2006

Date

I verify that this course outline has been reviewed.

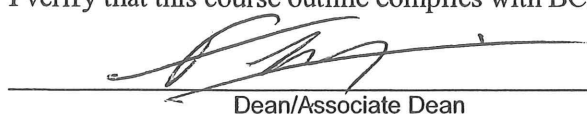


Program Head/Chief Instructor

AUG. 30, 2006

Date

I verify that this course outline complies with BCIT policy.



Dean/Associate Dean

2006/09/01

Date

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

Instructor:

Taco Niet	Office Location: SW9-205	Office Phone: 604-456-8032
	Office Hours: As posted	e-Mail Address: tniet@my.bcit.ca

■ **Learning Resources**

Required:

- *Applied Strength of Materials: 4th Edition* Mott, Robert L., Prentice Hall, New Jersey, 2002.

Recommended:

■ **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 20% per day late to a maximum of 3 days late.

Assignment Drop Box: The instructors drop box for assignments and labs is located under the stairs in the lobby of building SW9. Students are responsible for ensuring labs and assignments are submitted to the correct box and on time.

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.

■ **Assignment Details**

Assignment details will be provided in class.

Schedule

Week of/ Number	Tuesday Class	Thursday Class
1 Sept 18	Normal and shear stress and strains	Design of members under direct stresses
2 Sept 25	Axial deformation and thermal stresses	Quiz #1 Torsion
3 Oct 2	Shear and bending moments in beams	Quiz #2 Shear and bending moments in beams
4 Oct 9	Centroids and moments of inertia	Quiz #3 Centroids and moments of inertia
5 Oct 16	Normal stress due to bending	Quiz #4 Shear stress due to bending
6 Oct 23	Midterm review	MIDTERM EXAM
7 Oct 30	Combined stresses	Quiz #5 Combined stresses/Mohr's circle
8 Nov 6	Mohr's circle	Quiz #6 Mohr's circle
9 Nov 13	Deflection of beams	Quiz #7 Statically indeterminate beams
10 Nov 20	Columns	Quiz #8 Pressure vessels
11 Nov 27	Final review	FINAL EXAM