A POLYTECHNIC INSTITUTION

Course Outline

School of Manufacturing & Industrial Mechanical
Program: Chemical Sciences Technology
Option: Occupational Health and Safety

CHSC 1488
Engineering Concepts for OCHS

Start Date: January, 2006 **End Date:** May, 2006

Total Hours: 60 **Total Weeks:** 20 **Term/Level:** 4 **Course Credits:** 4
Hours/Week: 3 **Lecture:** 2 **Lab:** 2 hrs/wk alternate weeks **Other:**

Prerequisites
Course No. **Course Name**
None.

CHSC 1488 is a Prerequisite for:
Course No. **Course Name**
None.

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v Course Description (required)

A survey course covering properties and behavior of engineering materials. Testing and evaluation of materials and common causes of failure of materials will be studied. Non-destructive testing methods will be covered in depth.

v Detailed Course Description (optional)

The goals of this course are to provide the individual with the knowledge to:

1. conduct mechanical tests on materials.
2. explain the processes involved in shaping materials.
3. identify common causes of material failure.
4. perform non-destructive testing.

v Evaluation

Test 1	12.5%	Comments:
Test 2	12.5%	
Quizzes, Assignments	10 %	
Lab	25%	
Final Exam	40%	
TOTAL	100%	

v Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

1. perform hardness, tensile and impact tests on materials.
2. identify causes of failure in materials.
3. identify method of manufacture of machine components.
4. perform heat treatments on steel.
5. describe and list advantages of common non-destructive testing methods.

v Verification

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

Authoring Instructor — Date: January 3, 2006

I verify that this course outline has been reviewed.

Program Head/Chief Instructor — Date: Jan 9, 2006

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean — Date: 2004/01/10

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

v Instructor(s)

Lynn Erickson

Office Location: SW1-1415
Office Hrs.: By appointment
Office Phone: 604-456-1102
E-mail Address: lynn_erickson@bcit.ca

v Learning Resources

Required:

Engineering Materials Laboratory Manual (BCIT).

Calculator: Sharp EL 520W (Required for tests and final exam)

Recommended:

Kenneth Budinski, *Engineering Materials, Properties and Selection*, Prentice Hall.

v Information for Students

(*Information below can be adapted and supplemented as necessary.*)

Assignments: Late assignments, lab reports or projects will **not** be accepted for marking. Assignments must be done on an individual basis unless otherwise specified by the instructor.

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**.

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.

Conduct: Students are expected to conduct themselves appropriately at all times. Disruptive behaviors are deemed inappropriate and will not be tolerated by the Institute. An instructor who believes a student's conduct in the classroom is detrimental to the course goals, objectives and learning outcomes may recommend withdrawal.

Attendance: The attendance policy as outlined in the current BCIT Calendar 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: A doctor's note is required for any illness causing you to miss assignments, quizzes, tests, projects, or exam At the discretion of the instructor, you may complete the work missed or have the work prorated.

Attempts: Students must successfully complete a course within a maximum of three attempts at the course. Students with two attempts in a single course will be allowed to repeat the course only upon special written permission from the Associate Dean. Students who have not successfully completed a course within three attempts will not be eligible to graduate from the appropriate 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

Schedule

Week	Week Starting	Lecture Topic	Lab	Lab #	Room #	No Lab
1	Jan 02	A. Mechanical properties: Units, UTS, ductility				
2	Jan 09	• Yield strength, toughness, transition temperature	Tensile 1	1	1090	
3	Jan 16	• Hardness, creep, fatigue, fracture appearance				
4	Jan 23	• Factor of safety, problems	Tensile 2	2	1090	
5	Jan 30	B. Metals: Crystallography, grains, slip				
6	Feb 06	• Cold and hot working	Charpy	3	1090	
7	Feb 13	• Strengthening	Metals	4	1090	
8	Feb 20	• Forming, Casting, Test Prep.				
9	Feb 27	C. Steels: Fe-C diagram, plain carbon steels	Test 1 (March 2)		1090	
10	Mar 06	• Heat treatment, quench cracks	Review test, Video		1090	
11	Mar 13	**SPRING BREAK**				
12	Mar 20	• Families of steels	Heat treat	5	1090	
13	Mar 27	D. Plastics: Main groups, structure, properties				
14	Apr 03	• Orienting, Testing	Plastics	10	1090	
15	Apr 10	• Additives, forming, Test Prep.			1090	
16	Apr 17	Test 2 (April 21)	BCIT Closed			Monday
17	Apr 24	E. Composite materials: Metal & ceramic matrix	NDT	11	1075	
18	May 01	• Structure: polymer matrix composites	Library Res.			
19	May 08	F. Corrosion basics	Review			
20	May 15	Corrosion mechanisms				
21	May 22	**EXAMs**				