



A POLYTECHNIC INSTITUTION

School of Manufacturing & Industrial Mechanical

Program: Chemical Sciences Technology

Option:

CHSC 1262**Engineering Materials for Plastics Technology****Start Date:** January, 2006**End Date:** May, 2006**Total Hours:** 60 **Total Weeks:** 20**Term/Level:** 2 **Course Credits:** 4**Hours/Week:** 3 **Lecture:** 2 **Lab:** 2 hrs/wk alternate weeks**Other:****Prerequisites****CHSC 1262 is a Prerequisite for:****Course No. Course Name****Course No. Course Name**

None.

None.

v Course Description (required)

Covers comparative properties of all classes of engineering materials including metals, alloys, polymers, wood and ceramics. Common causes of failure in service including fatigue, weathering, embrittlement and corrosion.

v Detailed Course Description (optional)

The goals of this course are to:

1. describe and assess the capabilities of various materials and understand the effects of processing on properties.
2. understand structure/property relationships of plastics and polymer matrix composites.
3. appreciate the mechanical and physical properties involved in materials selection.
4. recognize common causes of material failures.
5. manufacturing with plastics and composites.

v Evaluation

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

v **Course Learning Outcomes/Competencies**

Upon successful completion, the student will be able to:

1. identify common causes of failure in materials.
2. perform basic ASTM mechanical testing of materials.
3. identify classes, properties and applications of low alloy, stainless and tool and die steels.
4. recognize properties and applications of common plastics and composites.
5. describe and recognize applications of non-destructive testing methods.
6. recognize various types of environmental failures and know how to prevent them.

v **Verification**

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



Authoring Instructor




Date

I verify that this course outline has been reviewed.



Program Head/Chief Instructor

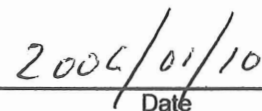


Date

I verify that this course outline complies with BCIT policy.



Dean/Associate Dean



Date

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

▼ **Instructor(s)**

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

▼ **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.

▼ **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.

▼ **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	<ul style="list-style-type: none"> Yield strength, toughness, transition temperature 	Tensile 1	1	1090	
3	Jan 16	<ul style="list-style-type: none"> Hardness, creep, fatigue, fracture appearance 				
4	Jan 23	<ul style="list-style-type: none"> Factor of Safety, Problems 	Tensile 2			
5	Jan 30	B. Metals: Crystallography, grains, slip, Structure/property relationships		2	1090	
6	Feb 06	<ul style="list-style-type: none"> Cold and hot working 	Charpy	3	1090	
7	Feb 13	<ul style="list-style-type: none"> Strengthening 	Metals	4	1090	
8	Feb 20	<ul style="list-style-type: none"> Forming, Casting, Test Prep 				
9	Feb 27	C. Steels: Iron-Carbon Diagram, plain carbon steels	Test 1		1090	
10	Mar 06	<ul style="list-style-type: none"> Heat Treatment, quench cracks 	Test Review, Videos		1090	
11	Mar 13	SPRING BREAK				
12	Mar 20	<ul style="list-style-type: none"> Stainless steels, tool & die steels 	Heat Treat	5		
13	Mar 27	C. Plastics: Main groups, Structure/property	Plastics	10	1090	
14	Apr 03	<ul style="list-style-type: none"> Polymerization 	Open House			Friday
15	Apr 10	<ul style="list-style-type: none"> Plastics manufacturing, testing 	BCIT Closed		1090	Friday
16	Apr 17	<ul style="list-style-type: none"> Non-Destructive Testing 	NDT	11	1090	
17	Apr 24	Test Prep.	Test 2		1075	
18	May 01	D. Composite materials: Structure / Properties	Test Review, Composites...			
19	May 08	E. Corrosion: Forms, Measurement				
20	May 15	<ul style="list-style-type: none"> Review 				
21	May 22	EXAM				