



A POLYTECHNIC INSTITUTION

School of Manufacturing, Electronics & Industrial Processes

Program: Manufacturing

Option: Taught to Manufacturing Term 3

MANU 3310

Material Removal Processes

Start Date:	September, 2006	End Date:	December, 2006
Total Hours:	75	Total Weeks:	15
Hours/Week:	5	Lecture:	2
		Lab:	3
		Shop:	
		Seminar:	
		Other:	

Prerequisites

Course No.	Course Name
MECH 1210	Manufacturing Processes

MANU 3310 is a Prerequisite for:

Course No.	Course Name
MANU 4412	Production Planning

Course Description

Evaluates material removal processes based on their relative merits; priorities of each process will be examined. Students will receive hands-on knowledge of various machine tools used for metal removal.

Evaluation

Lab Assignments/Project/Quizzes	35%
Midterm Exam	30%
Final Exam	35%
TOTAL	100%

Comments:

- Cheating and plagiarism penalties will be as per BCIT policy.

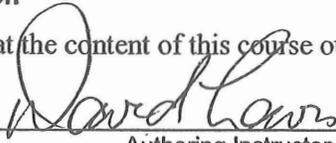
Course Learning Outcomes/Competencies

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

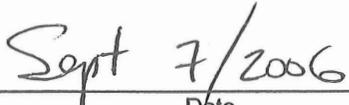
1. Establish the priorities of the machining operations.
2. Choose an appropriate operation and machine tool to achieve tolerance and surface finish required.
3. Utilize the appropriate fixture for a given operation.
4. Choose the most appropriate tool for material removal for any given quantity of parts to be produced.
5. Calculate power requirements for various material removal situations.
6. Select appropriate tool materials based on their composition and application.
7. Select effective cutting speeds and feeds, based on criteria such as tool geometry, material to be cut, quality requirements, power requirements and tool life.
8. Choose the correct tool geometry for the material to be cut.
9. Select effective coolants and cutting oils.

Verification

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

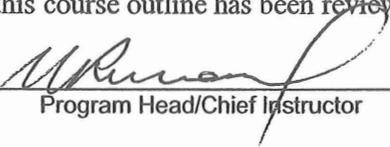


Authoring Instructor



Date

I verify that this course outline has been reviewed.

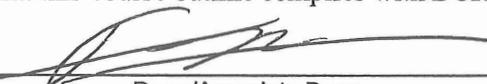


Program Head/Chief Instructor

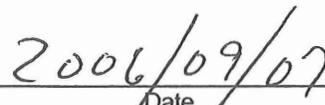


Date

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)

Dave Lewis

Office Location: SW9-201P

Office Hrs.: As posted

Office Phone: 604-432-8925

E-mail Address: dlewis@bcit.ca

Glenn Henderson

Office Location: SW9-106

Office Hrs.: By appointment

Office Phone: 604-451-6725

E-mail Address: glen_henderson@bcit.ca

Learning Resources

Required:

Equipment

- Safety glasses
- Suitable close fitting clothing capable of protecting arms and legs **MUST BE WORN AT ALL TIMES** in the shop
- CSA-approved (green triangle) safety footwear — puncture-proof sole, steel toe and ankle support

Recommended:

Information for Students

Assignments: Late assignments, lab reports or projects will be devalued 10% per day late. Assignments, lab reports or projects 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.

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.

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.

Assignment Details

Completed assignments should be neat and well organized. All assignments should include the Date, Course Number and the Student's Name, Technology and Set.

Number	Course Topics
1	<p>Effect of component specifications on the material removal process</p> <ul style="list-style-type: none">• material type• hardness• surface finish• tolerances• machineability
2	<p>Tooling Materials</p> <ul style="list-style-type: none">• tool steel• high speed steel• carbides• ceramics• tool coatings
3	<p>Tool Geometry</p>
4	<p>Investigating Machining Processes</p> <ul style="list-style-type: none">• turning• milling• drilling• boring• threading• grinding• electrical discharge machining (EDM)
5	<p>Cutting Oils and Coolants</p>
6	<p>Machine Tool Design Considerations</p>