A POLYTECHNIC INSTITUTION

Course Outline

School of Manufacturing, Electronics and Industrial Processes
Program: Chemical Sciences
Option:

CHSC 4412
Waste Management

Start Date:	January, 2006				**End Date:**	May, 2006		
Total Hours:	60	**Total Weeks:**	20		**Term/Level:**	4	**Course Credits:**	4
Hours/Week:	3	**Lecture:**	3	**Lab:**	**Shop:**		**Seminar:**	**Other:**

Prerequisites

Course No.	Course Name
CHSC 1119	Environmental Science

CHSC 4412 is a Prerequisite for:

Course No.	Course Name
None	

Course Description

Topics to be covered include: fabric filtration, wet scrubbing, cyclone collectors, electrostatic precipitators, stack samplers, primary, secondary, and tertiary methods of wastewater treatment, solid wastes, soil remediation, and special wastes.

Detailed Course Description

This course is intended to give the students an understanding of the most common methods of air and water pollution treatments and some specific industrial applications.

Evaluation

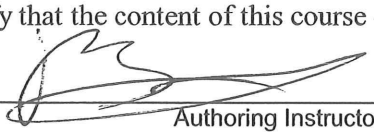
Final Exam	40%
Midterm 1	30%
Assignments	30%
TOTAL	100%

Course Learning Outcomes/Competencies

Upon completion of this course, the student will understand the principles, operation, efficiencies, and use of the major industrial air/water waste management systems.

■ Verification

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



Authoring Instructor — Date: Jan 27/06

I verify that this course outline has been reviewed.

Mark McDonald

Program Head/Chief Instructor — Date: Jan 27, 2006

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean — Date: 2006/02/02

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

■ Instructor(s)

Joffre Berry | Office Location: SW1–2535 | Office Phone: 604-432-8258
Office Hrs.: | E-mail Address: joffre_berry@bcit.ca

■ Learning Resources

Recommended:

1. *Air Pollution Control and Design Handbook* (two volumes). P. Cheremisinoff & R. Young. Marcel Dekker Inc. New York.

2. *Steam, Its Generation and Use.* Babcock & Wilcox, a McDermott company. Edited by S.C. Stultz & J.B. Kitto.

■ Information for Students

The following statements are in accordance with the BCIT Student Regulations Policy 5002. To review the full policy, please refer to: http://www.bcit.ca/~presoff/5002.pdf.

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 three 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 three 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.

Schedule

Week of/ Number	Outcome/Material Covered	Reference/ Reading	Assignment	Due Date
1	Pollution prevention; waste minimization.			
2	• Air pollution control technologies: Particulate and gas controls. • Fabric filters: principles of operation, types, specific uses, efficiency calculations.			
3	Cyclone collectors: principles of operation, design, efficiency calculations, effect of particle size, industrial applications.			
4	Electrostatic precipitators: particle changing, particle collection, particle removal, effect of dust resistivity and other parameters, industrial applications.			
5	Source testing: process information, sampling train, temperature, velocity, moisture and gas composition measurements, isokinetic sampling, particulate measurement.			
6	Source testing: laboratory procedure.			
7	Midterm exam.			
8, 9	Scrubbers: venturi scrubbers, counter-current wet scrubbers, lime-limestone scrubbers and other SO_2 scrubbers, NO_x scrubbers, other scrubbers. Control of odours.			
10	Review of Biochemical Oxygen Demand, oxygen demanding wastes.			
11	Primary sewage treatment.			
12	Secondary sewage treatment.			
13	Solid wastes; landfills, incineration.			
14	Wastes from mining industry; wastes from oil and gas exploration and development; oil spills.			

Week of/ Number	Outcome/Material Covered	Reference/ Reading	Assignment	Due Date
15	Methods for remediating soil contamination.			
16, 17	Industrial tours.			
18	Storm water management: green roofs — new technology.			
19	Final exam.			