



A POLYTECHNIC INSTITUTION

School of Manufacturing, Electronics & Industrial Processes

Program: Building Technology

Option:

MSYS 3880**Heating/Ventilating and Air-conditioning****Start Date:** September 5, 2006**End Date:** December 15, 2006**Total Hours:** 60 **Total Weeks:** 15**Term/Level:** 3 **Course Credits:** 4.0**Hours/Week:** 4 **Lecture:** 2 **Lab:** 2**Shop:** **Seminar:** **Other:****Prerequisites****Course No.** **Course Name****is a Prerequisite for:****Course No.** **Course Name****■ Course Description**

Introduces the factors and concerns influencing indoor comfort and heat transfer in buildings, properties of air and air conditioning processes. Application of these principles will be applied to preparing load estimates for a small building of a non-specialized nature. Include review of mechanical systems with descriptions of function and operation of components.

■ Detailed Course Description

- Thermal comfort, ventilation rate and air quality.
- Heat transfer in buildings.
- Heating and cooling load calculations for both residential and commercial buildings.
- Types of fans for ventilation systems.
- Overview of heating, ventilating and air-conditioning Systems with details of room air distribution systems.
- Energy Code/Bylaw

■ Evaluation

(Course marks weighting is subject to adjustment)

Laboratory Assignments	15%	Comments: Change may be allowed to suit specific purposes. Notices will be given should any change occur.
Mid-Term Examination #1	15%	
Mid-Term Examination #2	20%	
Final Examinations	50%	

TOTAL **100%****■ Course Learning Outcomes/Competencies**

Upon successful completion, the student will be able to:

1. Define requirements for comfort.
2. Analysis a given structure and calculate heat losses.
3. Determine the heat gain of a given structure.
4. Discusses the advantages/disadvantages of various HVAC systems in terms of specialized functions.

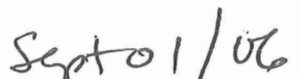
5. Explain the role of HVAC designer within the design team.
6. Interpret a HVAC systems design and discuss possible options.
7. Identify various types of air handling systems.
8. Specify construction materials to meet Energy Code/Bylaw.

■ Verification

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

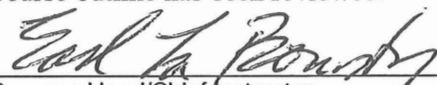


Authoring Instructor

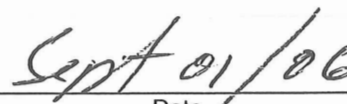


Date

I verify that this course outline has been reviewed.

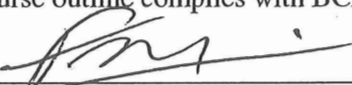


Program Head/Chief Instructor

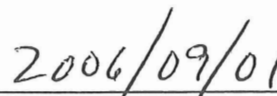


Date

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)

Joseph Cheung	Office Location: SW9 202	Office Phone: 604 451 6831
	Office Hrs.: By Appointment only	E-mail Address: jcheung19@my.bcit.ca
Brian Ennis	Office Location: SW9 202	Office Phone: 604 451 6830
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■ Learning Resources

Required:

Course Notes MSYS 3880 - Heating, Ventilating and Air-conditioning

Recommended:

ASHRAE Handbooks

■ 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 not be accepted and marked unless otherwise supported by reasons within BCIT policy.

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

Schedule

Week of/ Number	Outcome/Material Covered	Reference/ Reading	Assignment	Due Date
Week 1	Course outline Module 1 – Thermal Comfort			
Lab 1	Occupancy loads		1	
Week 2	Module 2 – Indoor Air Quality			Quiz to be submitted in the first ½ hr of lab
Lab 2	Quiz & Thermal comfort		2	
Week 3	Module 3 - Psychrometrics			Quiz to be submitted in the first ½ hr of lab
Lab 3	Quiz & Ventilation calculations		3	
Week 4	Module 4 – Sensible & Latent Heat			Quiz to be submitted in the first ½ hr of lab
Lab 4	Quiz & Psychrometrics		4	
Week 5	Module 5 - Basic Heat Transfer			Quiz to be submitted in the first ½ hr of lab
Lab 5	Quiz & sensible and latent heat equations		5	
Week 6	Module 6 – Heating Load Mid-Term Exam #1			
Lab 6	Mid-Term Exam answers review Manual Heating load calculations		6a	
Week 7	Module 7 – Cooling Load			Due at the end of Lab
Lab 7	Computer Lab for Heating Load Calculations using Excel		6b	
Week 8	Module 8 – Electric Heating System			
Lab 8	Computer Lab - Cooling Load Calculations using Excel		7a	
Week 9	Module 9 – Air-conditioning Systems			Due at the end of Lab
Lab 9	Computer Lab - Cooling Load calculations using Excel		7b	

Week 10	Module 10 – All air Systems Mid-term exam #2		8	
Lab 10	Review of Mid-term Examination #2answers			
Week 11	Module 11 – All water Systems			Due at the end of Lab
Lab 11	Electric heating design		9	
Week 12	Module 12 - Fans			Due at the end of Lab
Lab 12	Duct systems		10	
Week 13	Module 13 – Room Air Distribution			Due at the end of Lab
Lab 13	Fan systems		11	
Week 14	Complete course materials			
Lab 14	Exam review			
Week 15	Final Exam Week			