

Western University - Faculty of Engineering
Department of Civil and Environmental Engineering

CEE 2217a Introduction to Environmental Engineering
Course Outline 2018/19

This course introduces the basic engineering and science framework needed to understand and predict environmental processes and to appreciate the link between human activity and environmental sustainability. Main topics include population growth, resource consumption, sustainability, water pollution, material balances, air pollution, and climate change. The course emphasizes the role of the engineer in protecting human health and the environment. The course discusses pressing environmental issues and their impact on society, including the role of engineers to impact public perception, policy and legislation. The course provides an introduction to a career in environmental engineering, but also provides concepts that are relevant to all civil engineering careers.

The general objectives are for the student to be able to:

- Identify key components of the physical environment and how they are influenced by human activity.
- Recognize how culture, societal factors and economics frame environmental issues.
- Apply the mathematics of growth to better understand population growth and sustainability at various scales.
- Use the mass balance approach to estimate pollutant concentrations in simple open and closed environmental systems.
- Apply fundamental principles of chemistry and physics to model the fate of pollutants in the environment (air and water).
- Understand the central role of protecting public health and safety in the engineering profession.
- Understand the concepts of sustainable development and design and environmental stewardship.
- Improve communication and teamwork skills through undertaking individual written assignments, working on a group project, and delivering a group presentation.
- Appreciate the need for life-long learning to keep abreast of emerging environmental issues and policies.

Calendar Copy:

A course introducing the application of chemistry and engineering principles to an understanding of environmental issues associated with human activity. Topics include mass and energy transfer, environmental chemistry, water and air pollution, pollutant transport modeling, pollution management, and risk assessment.

Contact Hours: 3 lecture hours and 2 tutorial hours each week; (recommended additional personal study - 3 hours per week).

Attendance to lectures is **mandatory** and tutorial hours is **highly recommended**.

Prerequisite: Chemistry 1024A/B

Corequisite: None

Antirequisite: CHEM2210A/B

Note: It is the **student's responsibility** to ensure that all Prerequisite and Corequisite conditions are met or that special permission to waive these requirements has been granted by the Faculty. It is also the **student's responsibility** to ensure that they have not taken a course listed as an Antirequisite. The student may be dropped from the course or not given credit for the course towards their degree if they violate the Prerequisite, Corequisite or Antirequisite conditions.

Instructor

Dr. Jason I. Gerhard, SEB3029, e-mail: jgerhard@uwo.ca. Administrative Support: Sandra McKay SEB 3005.

Textbook

Course notes (with gaps) will be available for download from the course website. These should be downloaded from the course website in advance of class and brought to class. The gaps will be filled in during class. Solutions to the problems discussed in class and tutorials as well as the gap-filled notes will not be posted on the course website. It is expected the solutions to these problems and information to fill the gaps will be recorded by the students during the lectures and tutorials.

Other References (Useful, but purchase not required):

Striebig/Ogundipe/Papadakis (2016) Engineering Applications of Sustainable Design and Development (SI Edition), Cengage.

Gilbert M. Masters and Wendell P. Ela (2008). Introduction to Environmental Engineering and Science. 3rd Edition. Prentice Hall.

10 copies of these books are on 2-hr reserve in Taylor Library.

Units

SI unit systems will be adopted in assignments, test, and examination.

Specific Learning Objectives

I. Sustainable Development and Prediction of Growth (6 lecture hours)

At the end of this section, the student should be able to

- (a) Manipulate the mathematics of growth and predict quantities using the concepts of half-life and exponential decay.
- (b) Predict problems using continuous compounding with application to population growth and resource consumption.
- (c) Understand, differentiate and manipulate equations for exponential growth versus logistic growth.
- (d) Explain the concept of demographic transition in the context of population growth.
- (e) Understand the concept of Sustainability and the factors that influence it from the personal to the international scale.

II Pollutants in the Environment: Water (12 lecture hours)

At the end of this section, the student should be able to:

- (a) Identify the basic physical and chemical properties of water.
- (b) Recognize the major parts of the hydrologic cycle.
- (c) Conduct calculations to describe pollutant concentrations in water.
- (d) Apply key concepts of chemical ionic equilibrium to environmental aqueous systems.
- (e) Predict the behaviour and fate of pollutants in environmental water systems, such as pathogens, nutrients, heavy metals and pesticides.
- (f) Identify the common chemical properties shared among organic pollutants.
- (g) Understand the criteria used to describe water quality.
- (h) Appreciate the social and geopolitical implications of water pollution, water shortages and water disparity.

III Materials Balances (8 lecture hours)

At the end of this section, the student should be able to:

- (a) Use appropriate units in calculating or measuring environmental quantities for liquids, gases and solids.
- (b) Differentiate between conservative and non-conservative pollutants.
- (c) Apply the principles of mass conservation to materials balances in simple steady-state and transient environmental systems, including pollutant decay.

III. Pollutants in the Environment: Air (8 lecture hours)

At the end of this section, the student should be able to:

- (a) Recognize the key physicochemical concepts used to describe air pollutants.
- (b) Explain key air pollution problems such as ozone depletion, photochemical smog, and climate change.
- (c) Understand the key societal and economic factors that influence the management of local, national and global air pollution.
- (d) Recognize the basic chemical mechanisms that lead to ozone depletion.
- (e) Appreciate the Montreal Protocol as an example of successful global partnership to reduce a targeted environmental threat.
- (f) Understand global carbon emissions, carbon footprint and recent carbon trade schemes.
- (g) Explain the majority scientific opinion surrounding global climate change and understand the importance of the topic in the future of the engineering profession.
- (h) Develop an appreciation for the major impacts of global climate change and the dominant environmental, social, and economic systems that will be impacted.

General Learning Objectives

E=Evaluate, T=Teach, I=Introduce (*Beginner or Intermediate or Advanced Level*)

Knowledge Base	E	Team Work	I	Economics and Project Management	-
Problem Analysis	E	Communication	E	Life-Long Learning	I
Investigation	I	Professionalism	E		-
Design		Impact on Society	E		
Engineering Tools	I	Ethics and Equity	I		

Evaluation

The final course mark will be determined as follows:

Participation	10%
Assignments:	10%
Midterm exam	15%
Project	15%
Final Examination	50%
Total	100%

Note: (a) **Students must pass the final examination to pass this course.** Students who fail the final examination will be assigned the aggregate mark, as determined above, or 48%, whichever is less.

(b) **Students who have failed this course previously must repeat all components of the course.** No special permissions will be granted enabling a student to retain laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted.

(c) Should the midterm conflict with a religious holiday that a student wishes to observe, the student must inform the instructor of the conflict no later than two weeks before the scheduled test.

(For further information on Accommodations for Religious Holidays see https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

1. Midterm Examination:

The midterm exam will be 2.0 hours. Date, Time, and Room TBA.

The midterm will be **CLOSED BOOK: no programmable calculators or other external sources of information, including books, notes or crib sheets, are permitted.** A list of equations will be provided on the exam (and posted one week prior to the exam). A list of acceptable calculators for closed book exams will be posted on the bulletin board across from the Department of Civil and Environmental Engineering Office: please be sure your calculator is on it! **Part marks may not be awarded for some of the problems on the midterm or final exam.**

2. Assignments

The purpose of the assignments is to help students in their assimilation and synthesis of the material, to develop their communication skills, and to prepare for the midterm and final. Assignment questions will, like the exam questions, consist of a mix of short answer,

computations, and essay-style responses. There will be 4 assignments during the term. Assignments will be posted on the course website at 2 week intervals. They are due biweekly to give you more time and flexibility to complete them; **however, they are LONG assignments (the length of two weekly assignments), so ensure you devote adequate time.** A tutorial will always be provided dedicated to assisting students with the current assignment; students are encouraged to try the questions before coming to the tutorial. Assignments will be due electronically through the course website; if completed by hand, then it must be converted to a **very clear and legible** PDF for submission (see instructions online). Submission in incorrect format will be assigned a mark of zero. Late submission of assignments carries a penalty of 33% per day for 2 days. After 2 days (i.e., after Thursday 8:30am) the missing assignment will be marked zero. Extensions cannot be negotiated with the course instructor, nor the teaching assistants. Request for extensions for legitimate reasons (e.g., sickness) must be submitted to the UG services (SEB 2097) office where supporting documentation will be required. The maximum number of missed assignments for each student will be one; if more than one assignment is missed a student may be barred from writing the final exam.

A detailed assignment schedule will be announced at the start of class.

3. Project

A group research project will be assigned. Groups will be randomly assigned. The project runs throughout the course with a succession of written and oral deliverables. A component of peer review is included to ensure equal contribution from all group members. You are expected to work on this during tutorial periods and on your own time. Full details provided in separate document.

4.0 Participation

Participation is an important component of this course. It will be assessed in four ways:

- a) Attendance at lectures and all presentations (including guest lectures and student presentations) using iClicker Cloud
- b) Participation in in-class polls conducted with iClicker Cloud
- c) Raising your hand and verbally contributing to class discussions
- d) Posting relevant, original, constructive material to the online discussion forums on the class website (both original posts and replies)

Information regarding iClicker Cloud

Classroom Polling

We will be using a cloud-based student response software by iClicker in class this semester. This will help me understand what you know, give everyone a chance to participate in class, and provide more interaction on concepts and example questions. We will also be using this software to keep track of attendance. At the start of every class you will register your attendance; only after you do this will you be able to answer any poll questions posted.

You will need to create an iClicker Reef Student account to participate in class using your laptop, smart phone, or tablet connected to the university Wi-Fi.

Creating Your iClicker Reef Student Account

Go to iclicker.com/students or download the iClicker Reef Student app for your Apple or Android device to sign up for a Reef account. You should use your university email address and your University ID (e.g., “jgerhard” for student jgerhard@uwo.ca) in the Student ID field. You can edit your email address, password, or student ID from your account profile. Do not create and use more than one Reef account as you will only receive credit from a single account.

You do not need to purchase anything – iClicker Cloud is fully supported by Western and is free to all its students. Make sure you choose University of Western Ontario when signing up.

Add This Course to Your Reef Account

Search with the following information to find this course and add it to your Reef account:

Institution: **Western University Ontario**

Course: **CEE 2217 Intro to Environ**

Troubleshooting

You can find the answers to many of your questions on the iClicker student support site (<https://community.macmillan.com/community/iclicker-support/iclicker-student-support>). If you continue to experience issues, please contact support via phone (866.209.5698) or email (support@iclicker.com). Live support is available Monday - Thursday from 9AM - 11PM, ET and Friday from 9AM - 9PM, ET

Cheating

Submitting votes or attendance for another student is considered cheating and a violation of the University Code of Conduct. If you are caught voting for another student or have votes in a class that you did not attend, you will forfeit all Reef points and may face additional disciplinary action.

5. Use of English

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

6. Final Examination:

The midterm exam will be 3.0 hours on a date to be determined. Consult the final exam schedule when published.

The final examination will be **CLOSED BOOK: no programmable calculators or other external sources of information, including books, notes or crib sheets, are permitted.** A list of equations will be provided on the exam (and posted one week prior to the exam). A list of acceptable calculators for closed book exams will be posted on the bulletin board across from the Department of Civil and Environmental Engineering Office: please be sure your calculator is on it! **Part marks may not be awarded for some of the problems on the final exam.**

SDC's Learning Skills Services

Rm 4100 WSS, www.sdc.uwo.ca/learning

LS counsellors are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Peer support is offered throughout the Fall/Winter terms in the drop-in PAL Centre, and Individual Counselling is available year round.

Plagiarism Checking:

All required papers or essay-style submissions may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>). For numerical submissions, teaching assistants will be checking for evidence of copying; excessive similarity between assignments will be taken as evidence of plagiarism at the discretion of the course instructor.

Scholastic Offences (Cheating):

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Attendance:

Attendance to the lectures and tutorials is mandatory and will be monitored (as described above). Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be barred from taking the final exam in the course.

Use of laptop computers, tablets or smart mobile phones.

Use of laptop computers, tablets or smart mobile phones is expected to be for the purpose of participating in the lecture explicitly. They can be used to fill in the gapped notes, participate in class polls, and to register your attendance. Students using the devices for activities not related to this class may be asked to leave.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone audio or motion notifications (calls, texts, alerts, etc) before coming to a class. Students are expected to participate in class discussions.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.uwo.ca/univsec/board/code.pdf>

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see attached). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

See the attached “INSTRUCTIONS FOR STUDENTS UNABLE TO WRITE TESTS OR EXAMINATIONS OR SUBMIT ASSIGNMENTS AS SCHEDULED”

There will be no make-up midterm exam nor assignments. If you are unable to write a test for medical or compassionate reasons, you must provide the appropriate documentation to the CEE Department Office (SEB 3005) office and upon recommendation from the UG service office the weighting of the final exam will be adjusted accordingly. Failure to provide the adequate documentation will result in a mark of 0 for the missed exam/assignment.

Support Services

There is an abundance of support services to help you with virtually any type of challenge you may experience. Here are a few:

Registrarial Services <http://www.registrar.uwo.ca>

Student Support Services: <http://westernusc.ca/services/>

Emotional/Mental Health Support <http://www.uwo.ca/uwocom/mentalhealth/>

Wellness Education Centre (WEC), connecting students with wellness resources
<http://se.uwo.ca/wec.html>

Or contact Undergraduate Student Services in Western Engineering, your Departmental Undergraduate Counsellor, or the Course Instructor. If you feel you need help of some kind, do not hesitate to reach out. We are all here to help you overcome challenges and be healthy and successful. We can only help if you let us know.

Notices

Students are responsible for regularly checking their email, course website (<https://owl.uwo.ca>) and notices posted outside the Civil and Environmental Engineering Department Office.

Consultation Hours

Students are encouraged to discuss problems with the teaching assistant and/or instructor during tutorial sessions. In between these times, students are encouraged to use the online forum on the website for discussing specific course material. Individual consultation with the professor may be arranged by appointment requested via email.

CEAB Course Breakdown

Engineering Science = 40%: 20.16 AUs

Basic Science = 35%: 17.64 AUs

Complementary Studies = 25%: 12.6 AUs

Total = 49.60 AUs

INSTRUCTIONS FOR STUDENTS UNABLE TO WRITE TESTS OR EXAMINATIONS OR SUBMIT ASSIGNMENTS AS SCHEDULED

If, on medical or compassionate grounds you are unable to write term tests or final examinations or complete course work by the due date, you should follow the instructions listed below. You should understand that academic relief will not be granted automatically on request. You must demonstrate to your department (or the Undergraduate Services Office) that there are compelling medical or compassionate grounds that can be documented before academic relief will be considered. Different regulations apply to term tests, final examinations and late assignments. Please read the instructions carefully.

A. GENERAL REGULATIONS & PROCEDURES

1. All first year students will report to the Undergraduate Services Office, SEB 2097, for all instances.
2. If you are an upper year student and you are missing a test/assignment/lab or examination that is worth LESS THAN 10% of your mark, you should report to your department office to request relief. If your course work is MORE THAN 10% of your final grade, you will report to the Undergraduate Services Office, SEB 2097.
3. Check the course outline to see if the instructor has a policy for missed tests, examinations, late assignments or attendance.
4. Documentation must be provided as soon as possible. If no one is available in your department office or the Undergraduate Services Office, leave a message clearly stating your name & student number and reason for your call. The department telephone numbers are given at the end of these instructions.
5. If you decide to write a test or an examination you should be prepared to accept the mark you earn. Rewriting tests or examinations or having the value of a test or examination reweighted on a retroactive basis is not permitted.

B. TERM TESTS

1. If you are in first year and you are unable to write a term test, contact the Undergraduate Services Office, SEB 2097 PRIOR to the scheduled date of the test.
2. If you are an upper year student and you are unable to write a term test, inform your instructor PRIOR to the scheduled date of the test. If the instructor is not available, leave a message for him/her at the department office. If the test is worth LESS THAN 10% of your mark, you should report to your department office to request relief. If the test is worth MORE THAN 10% of your final grade you will report to the Undergraduate Services Office, SEB 2097 to request relief.
3. Be prepared to provide supporting documentation to the Department Chair and/or the Undergraduate Services Office (see next page for information on documentation).
4. Discuss with the instructor if and when the test can be rescheduled. **N.B.** The approval of the Chair or the Undergraduate Services Office is required when rescheduling term tests.

C. FINAL EXAMINATIONS

1. If you are unable to write a final examination, contact the Undergraduate Services Office **PRIOR TO THE SCHEDULED EXAMINATION TIME** to request permission to write a Special Final Examination. If no one is available in the Undergraduate Services Office, leave a message clearly stating your name & student number.
2. Be prepared to provide the Undergraduate Services Office with supporting documentation (see next page for information on documentation) the next day, or as soon as possible (in cases where students are hospitalized). The following circumstances are not considered grounds for missing a final examination or requesting special examinations: common cold, sleeping in, misreading timetable and travel arrangements.
3. In order to receive permission to write a Special Examination, you must obtain the approval of the Chair of the Department **and** the Associate Dean and in order to apply you must sign a "Recommendation for a Special Examination Form" available in the Undergraduate Services Office. The Undergraduate Services Office will then notify the course instructor(s) and reschedule the examination on your behalf.

PLEASE NOTE: It is the student's responsibility to check the date, time and location of the Special Examination.

D. LATE ASSIGNMENTS

1. Advise the instructor if you are having problems completing the assignment on time (**prior** to the due date of the assignment).
2. Be prepared to provide documentation if requested by the instructor (see reverse side for information on documentation).
3. If you are granted an extension, establish a due date. The approval of the Chair of your Department (or the Assistant Dean, First Year Studies, if you are in first year) is not required if assignments will be completed prior to the last day of classes.
4.
 - i) Extensions beyond the end of classes must have the consent of the instructor, the department Chair and the Associate Dean, Undergraduate Studies. Documentation is mandatory.
 - ii) A Recommendation of Incomplete Form must be filled out indicating the work to be completed and the date by which it is due. This form must be signed by the student, the instructor, the department Chair and the Associate Dean, Undergraduate Studies.

E. SHORT ABSENCES

If you miss a class due to a minor illness or other problem, check your course outlines for information regarding attendance requirements and make sure you are not missing a test, laboratory or assignment. Cover any readings and arrange to borrow notes from a classmate.

F. EXTENDED ABSENCES

If you are absent more than one week or if you get too far behind to catch up, you should consider reducing your workload by dropping one or more courses. (Note drop deadlines listed below). You may want to seek advice from your academic counsellor in the Undergraduate Services Office.

G. DOCUMENTATION

If you consulted an off-campus doctor or Student Health Services regarding your illness or personal problem, **you must provide the doctor with a Student Medical Certificate** to complete at the time of your visit and then bring it to the Department (or the Undergraduate Services Office). **This note must contain the following information: severity of illness, effect on academic studies and duration of absence. Regular doctor's notes will not be accepted; only the Student Medical Certificate will be accepted.**

In Case of Serious Illness of a Family Member: Provide a Student Medical Certificate to your family member's physician to complete and bring it to the Department (or the Undergraduate Services Office if you are in first year).

In Case of a Death: Obtain a copy of the death certificate or the notice provided by the funeral director's office. You must include your relationship to the deceased and bring it to the Department (or the Undergraduate Services Office if you are in first year).

For Other Extenuating Circumstances: If you are not sure what documentation to provide, ask the Departmental Office (or the Undergraduate Services Office if you are in first year) for direction.

Note: Forged notes and certificates will be dealt with severely. To submit a forged document is a scholastic offence (see below).

H. ACADEMIC CONCERNS

1. You need to know if your instructors have a policy on late penalties, missed tests, etc. This information may be included on the course outlines. If not, ask your instructor(s).
2. **You should also be aware of attendance requirements in some courses. You can be debarred from writing the final examination if your attendance is not satisfactory.**
3. If you are in academic difficulty, check out the minimum requirements for progression in the calendar. If in doubt, see your academic counsellor.

Calendar References: Check these regulations in your 2018 Western Academic Calendar available at www.westerncalendar.uwo.ca.

Absences Due to Illness:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12

Academic Accommodations for Students with Disabilities:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_10

Academic Accommodations for Religious or Holy Days:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_16

Course Withdrawals:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=6&SelectedCalendar=Live&ArchiveID=#Page_75

Examinations:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=5&command=showCategory&SelectedCalendar=Live&ArchiveID=#Page_75

Scheduling of Term Assignments:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_78

Scholastic Offences:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20

Student Medical Certificate: <https://www.eng.uwo.ca/files/undergraduate/forms/smc.pdf>

Engineering Academic Regulations:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=4&SelectedCalendar=Live&ArchiveID=#Page_86

Note: These instructions apply to all students registered in the Faculty of Engineering regardless of whether the courses are offered by the Faculty of Engineering or other faculties in the University.

Add Deadlines:

First term half course (i.e. “A” or “F”)	September 14, 2018
Full courses and full-year half course (i.e. “E”, “Y” or no suffix)	September 14, 2018
Second term half course (i.e. “B” or “G”)	January 15, 2019

Drop Deadlines:

First term half course (i.e. “A” or “F”)	November 12, 2018
Full courses and full-year half courses (i.e. “E”, “Y” or no suffix)	November 30, 2018
Second term half or second term full course (i.e. “B” or “G”)	March 7, 2019

Contact Information:

Undergraduate Services Office:	SEB 2097	Telephone: (519) 661-2130	E-mail: engugrad@uwo.ca
Dept. of Chemical and Biochemical Engineering & Green Process Engineering:	TEB 477	Telephone: (519) 661-2131	E-mail: cbeugrad@uwo.ca
Dept. of Civil and Environmental Engineering:	SEB 3005	Telephone: (519) 661-2139	E-mail: civil@uwo.ca
Dept. of Electrical and Computer Engineering, Software Engineering & Mechatronics Engineering:	TEB 279	Telephone: (519) 661-3758	Email: eceugrad@uwo.ca
Dept. of Mechanical and Materials Engineering:	SEB 3002	Telephone: (519) 661-4122	E-mail: mmeundergraduate@uwo.ca