

CBE 4411 A/B Engineering Coffee

Course Syllabus 2025-26

1 Purpose of the course

The course will combine and demonstrate chemical engineering in an experiential learning setting using coffee as a teaching tool. The course allows opportunities to synthesize concepts from many of the second and third year chemical engineering courses as well as from the first year business course for engineers.

2 Calendar Description

This course combines and demonstrates chemical engineering using coffee as a teaching tool. Experiential learning will include hands-on applications of concepts through multiple lab activities and an examination of a local café through a case based learning activity.

Prerequisites: CBE 2220 A/B, CBE 2221 A/B, CBE 3322 A/B, CBE 3323 A/B, CBE 3324 A/B

Co-requisites: None.

Anti-requisites: None.

Contact Hours: 3 laboratory hours, 1 tutorial hour

CEAB Academic Units: Engineering Design 70%, Engineering Science 20%, Complementary studies (Teamwork and Oral & Written Communication) 10%

Text: No required text. Lecture notes and supporting course information will be posted to OWL.

Reference Material: Suggested readings may be posted to OWL.

Units: Both SI and FPS unit systems may be used in lectures, tutorials and all assessments.

3 Instructors

Lauren Tribe, Associate Professor, contact: lbriens@uwo.ca

4 General Workload Expectations and Contact Hours

- Online preparation before each weekly activity
- Participation in weekly activities
- Post-activity deliverables

CBE 4411 will be delivered in a weekly cycle of a pre-activity module with a quiz, hands-on activity (during 3 hour laboratory) and then post-activity deliverables. There is a 1 hour tutorial each week that will be used as required to provide help with concepts and extra time for hands-on activities.

5 Course Learning Outcomes

By the end of this course, successful students will be able to:

- Synthesize concepts from previous courses to the application of coffee processing
- Acquire skills and confidence to expand ability to synthesize engineering concepts to many real-world and important applications beyond coffee processing
- Appreciate non-traditional applications of chemical engineering
- Acquire information that might influence career decisions and pathways
- Analyze and evaluate parameters that affect coffee processing
- Create a process to make the perfect cup of coffee
- Understand and describe how coffee processes affect the operation of a café
- Appreciate how engineering and business complement each other and how both need to be considered for successful application of an idea

By the end of this course, successful students will feel empowered to:

- Tackle tasks that are new and may be uncomfortable
- Able to identify and work on areas of growth instead of continuing to demonstrate only areas of competence
- Articulate skills that have been developed during the course
- Set and work towards goals
- Self-assess participation and professionalism; useful skill as self-assessments are commonly used in workplace performance appraisals.

Knowledge Base		Use of Engineering Tools	A	Impact on Society and the Environment	
Problem Analysis	A	Individual and Teamwork		Ethics and Equity	
Investigation		Communication Skills		Economics and Project Management	
Design		Professionalism		Life-Long Learning	

PA 2 – Demonstrate ability to formulate a strategy to solve an engineering problem

- Students submit a final project on how to brew an optimal cup of coffee

ET 3 – Demonstrates ability to create/develop/adapt appropriate engineering tools

- Students use tools learned during course to brew an optimal cup of coffee for their final project

6 Methods of Evaluation

Deliverable	Assessment (%)
Preliminary survey	2
Pre-activity modules	8
Activity reports	40
Photographic journal	15
Culminating project	35

Preliminary survey

Prior to the start of the course, students will complete a survey to assess their level of knowledge of core course material and level of integration and to determine goals and course expectations.

Pre-activity modules

There will be background information available each week to review online and to prepare for each activity. There is a short quiz for each module with two attempts to complete.

Activity reports

A report will be completed for each activity that includes results/discussion/conclusions and a reflection component on the most surprising and challenging aspects of each activity and suggestions for improvement. Although the activities are completed in pairs, the reports are completed individually.

Photographic journal

There will be a reflective photographic collective journal. Students will be required to submit a photo to the course Instagram site that captures an aspect of each activity. This is a way to share, learn, and further reflect upon the course experiences. It will also strengthen the interactions between students thereby forming a stronger community in which all are valued and positively contributing.

Culminating project

The culminating project will include a competition between teams to make “the best” cup of coffee. The assessment will be student centred: students will choose the criteria to assess the best cup of coffee based on the knowledge and skills they have developed, learned and practiced throughout

the course. This approach will increase motivation for engagement, provide more ownership over learning, another opportunity for reflection on the learning outcomes, and an opportunity to develop skills in self and peer assessment. There will be an individual report associated with the culminating project and a component of the report will require reflection upon the course as a learning experience and its impact on their future as an engineer.

Diversity Statement

I consider the space for CBE 4411A to be a place where you will be treated with respect. I welcome individuals from all abilities, backgrounds, beliefs, ages, national origins, ethnicities, religious affiliations, genders and gender expressions and identities, sexual orientations, and any other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for everyone in the class.

Gender-Based and Sexual Violence

"Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who is going through or has gone through these traumatic events. If you are experiencing or have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts at the following website: https://www.uwo.ca/health/student_support/survivor_support/get-help.html To connect with a case manager or set up an appointment, please contact support@uwo.ca."

Repeating All Components of the Course

In accordance with Senate and Faculty Policy, students who have failed an Engineering course 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 for grading by the student in subsequent years.

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.

Attendance

Attendance is mandatory for the activities. There will not be opportunities to make up any activities. There are eleven modules/activities. Attendance of a minimum of eight activities is required to achieve a passing grade in the course.

Academic Offences

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_grad.pdf

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning (see Scholastic Offence Policy in the Western Academic Calendar).

Plagiarism

Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). The University of Western Ontario has software for plagiarism checking. 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>). If a student submission match score on Turnitin (without considering small word matches and references) is more than 35%, then the submission will be assigned a grade of zero.

Artificial Intelligence

Students may use artificial intelligence tools, including generative AI, in this course as learning aids and/or to help produce their reflections and/or project. Students, however, are ultimately accountable for any work they submit for this course. The use of any AI tool must be documented in an appendix with the submitted deliverable; the documentation must include which AI tool(s) were used, how they were used and how the results were incorporated into the submission. In addition, any content produced by AI must be cited appropriately.

Conduct

Students are expected to arrive at the activities on time and to conduct themselves during class in a professional and respectful manner that is not disruptive to others.

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. 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.

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.

Notices

Students are responsible for regularly checking their Western email and the announcements posted to Brightspace.

Consultation

Students are encouraged to discuss problems with their teaching assistants and/or instructor. Individual consultation can be arranged by appointment with the instructor.

Instructions for Students Unable to Write Tests or Examinations or Submit Assignments as Scheduled

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade: A student seeking academic accommodation for any work worth less than 10% must contact the instructor directly. The instructor will use good judgment and ensure fair treatment for all students. Where medical documentation is required, such documentation must be submitted by the student directly to the appropriate Faculty Dean's office, and it will be the Dean's office that will make the determination

whether accommodation is warranted. Given the University's Official Student Record Information Privacy Policy, instructors may not collect medical documentation.

Assessments worth 10% or more of the overall course grade: For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For further information, please consult the University's medical illness policy at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

The Student Medical Certificate is available at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.