Western Engineering

DEPARTMENT OF CHEMICAL & BIOCHEMICAL ENGINEERING

CBE 4411a Engineering Coffee

Course Outline Fall/Winter 2026-2027

Instructor: Lauren Tribe

LAB:	3 hours per week
TUTORIAL:	1 hour per week
ANTIREQUISITE(s):	none
PREREQUISITE(s):	CBE 2220 A/B, CBE 2221 A/B, CBE 3322 A/B, CBE 3323 A/B, CBE 3324 A/B
CEAB Academic Units:	Engineering Design 70%, Engineering Science 20%, Complementary studies (Teamwork and Oral & Written Communication) 10%
TEXT / Course Resources / References	Course notes will be available on Brightspace

COURSE 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.

General Learning Objectives (CEAB Graduate Attributes)

Knowledge Base		Engineering Tools	A	Impact on Society	
Problem Analysis	A	Individual & Teamwork		Ethics and Equity	
Investigation		Communication		Economics and Project Mgmt.	
Design		Professionalism		Life-Long Learning	

Rating:

I – The instructor will introduce the topic at the level required. It is not necessary for the student to have seen the material before.

D – There may be a reminder or review, but the student is expected to have seen and been tested on the material before taking the course.

A – It is expected that the student can apply the knowledge without prompting (e. g. no review).

Specific CEAB Graduate Attributes

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

Evaluation Components

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. Survey is due on Wednesday September 9, 2026. You are expected to submit the reflection by the deadline. Should illness or extenuating circumstances arise, students are permitted to submit their reflection up to 48 hours past the deadline without academic penalty. Should students submit their survey beyond 48 hours past the deadline, a grade of 0% will be assigned. As flexible deadlines are used for these assessments, requests for academic consideration will not be granted. If you have a long-term academic consideration or an accommodation for disability that requires greater flexibility than provided here, please reach out to the Course Instructor at least one week prior to the posted deadline.

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. The quizzes are due on Thursday mornings by 6:00am. There are ten quizzes and the best 9 of

10 will be used for the final grade. As there is flexibility in these quizzes, requests for academic consideration will not be granted.

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. There are ten reports and the best 9 of 10 will be used for the final grade. As there is flexibility in these quizzes, requests for academic consideration will not be granted.

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. There will be ten activities that require a photo submission and the best 9 of 10 will be used for the final grade. As there is flexibility in these quizzes, requests for academic consideration will not be granted.

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.

This assessment is considered to be central to the learning objectives of the course. Accordingly, students seeking academic consideration for this assessment will be required to provide supporting documentation. Late reports will be deducted 10% per day.

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.

Brightspace Resources and Course Materials

Course notes will be available on the course Brightspace site. Materials will be provided for the weekly activities. Students will, however, be required to purchase the coffee and any additional items (eg. milk, sugar) they will use for the culminating project.

GenAI Statement

GenAI tools may not be used for the reflection components of the weekly activity reports and the individual reflection component of the final culminating project report. GenAI tools, however, may be used in summarizing content and helping to prepare for the reports. When GenAI tools are used, students must include a statement outlining the use.

Faculty of engineering Policies and Procedures-Undergraduate

The Faculty of Engineering has established for 2025 a set of Policies and Procedures for Undergraduate Students. The policy covers:

- Absence/Late Accommodation Policy
- Religious Accommodation
- Academic Integrity
- Academic Offences
- Faculty of Engineering AI Policy
- Accessibility
- Inclusivity, Diversity, and Respect
- Health and Well-being