Western Engineering

DEPARTMENT OF CHEMICAL & BIOCHEMICAL ENGINEERING

CBE 3395Y – CHEMICAL ENGINEERING LABORATORY

Course Outline Fall/Winter 2025-2026

Professor: Cedric Briens, cbriens@uwo.ca

Laboratory Supervisor: Erin Johnson, epeter22@uwo.ca

Teaching Assistants:

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LECTURE:	Tuesdays, 12:30-1:30 pm
LAB Sessions:	~~Mondays, 1:30-4:30 pm~~ Tuesdays, 1:30-4:30 pm Wednesdays, 8:30-11:30 am Thursdays, 9:30 am -12:30 pm Thursdays, 1:30-4:30 pm
OFFICE HOURS	Upon request by email
ANTIREQUISITE(s):	none
PREREQUISITE(s):	CBE 2220, CBE 2221.
CO-REQUISITE(s):	CBE 3322 , CBE 3323 , CBE 3324
CEAB Academic Units:	Engineering Science 50%, Engineering Design 50%
TEXT / Course Resources / References Course Notes from CBE 3322A/B, CBE3323 A/B, 3324A/B.	CBE 3395 course notes and lab manuals are available for students to download from the CBE 3395Y course website on Brightspace.
DESCRIPTION (50 words max) This laboratory course applies and integrates concepts/theories presented in CBE 3322 (Heat Transfer Operations), CBE 3323 (Staged Operations), and CBE 3324 (Mass Transfer Operations).	

General Learning Objectives (CEAB Graduate Attributes)

Knowledge Base		Engineering Tools		Impact on Society	
Problem Analysis		Individual & Teamwork	D	Ethics and Equity	
Investigation	D	Communication	D	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).

Learning Outcomes	**(CEAB) Graduate Attribute**
Generally, through this course students are able to perform pre-designed and investigation lab experiments in group (5-6 students per group) using the principles and knowledge from the following courses, aiming to integrate and apply selected concepts/theories to chemical engineering process applications: ○ Heat transfer operations (CBE 3322) ○ Mass transfer operations (CBE 3324) ○ Staged Operations (CBE 3323) Specifically, students should be able to:	
Perform pre-designed lab experiments in a group following the lab manuals provided;	IT 2- Demonstrates ability to contribute to team goals. (Developed level)
Conduct **investigation labs** in a group by proposing designing their own experimental procedure and methods, performing the experiments, and collecting data, supervised by the TAs, the laboratory supervisor, and the instructor.	IN 2 – Demonstrate ability to conduct an investigation successfully. (Developed level) IN 3 – Demonstrate ability to analyse and interpret data to reach valid conclusions. (Developed level)
Present their results and conclusions in oral presentations and written reports.	CS 2. Demonstrate the ability to communicate orally using appropriate materials, language, non-verbal communication and effective graphical tools. (Developed level)

Assessment

Name	**% Worth**	**Due Date**	**Learning Outcomes**
Fall term			
Lab performance	10	Oct. 7, Dec. 6	IT 2
Investigation Lab report	15	Dec. 6	IN 2, IN 3
Lab presentations	25	Dec. 2-4	CS 2
Winter term			
Lab performance	10	April 4	IT 2
Investigation Lab report	15	April 4	IN 2, IN 3
Lab presentations	25	TBD	CS 2

Attendance

Attendance at each laboratory session is mandatory. Attendance will be taken. If you miss a laboratory session:

1) Report the absence by submitting Academic Consideration Request form through STUDENT ABSENCE PORTAL.
2) Contact Dr. Erin Johnson to schedule a make-up lab session.
3) If you do not schedule a make-up lab session, you will incur a penalty of 10% of the mark for the term (e.g., if your average mark is 80% for the Fall term, your mark will be reduced to 70% for one unattended make-up lab session, and 60% for two unattended make-up lab sessions).

ADDITIONAL INFORMATION

Students receive specific instruction on safety issues for all laboratory experiments and the laboratory space. Students must submit WHMIS certificates to verify their training in laboratory safety and handling of chemicals.

Please consult the Lecture slides for additional information.

Details on lab performance evaluation:
In the Fall term, 3 submissions are required:

1) By Oct. 7, a 1 to 2-page report on issues identified with the group and measures put in place to resolve them. One submission from the whole group on Brightspace.
2) By Dec. 6, complete the Project Team Grade Distribution Form (the blank form is available from Brightspace) and submit it on Brightspace. One submission from the whole group on Brightspace.
3) By Dec. 6, each group member's individual 1-page self-evaluation report will be submitted on Brightspace.

In the Winter term, 2 submissions are required:

1) By April 4, complete the Project Team Grade Distribution Form (the blank form is available from Brightspace) and submit it on Brightspace.
2) By April 4, each group member's individual 1-page self-evaluation report will be submitted on Brightspace.

Term A (Fall term) Labs:

Lab A: Linear & Radial Heat Conduction

Lab B: Heat Exchangers

Lab C: Fluidization (minimum fluidization and heat transfer)

Investigation Lab I1: Cooling towers performance enhancements, heat and mass transfer limitations, design considerations

Term B (Winter term) Labs:

Lab D: Distillation

Lab E: Evaporation

Lab F: Leaching

Investigation Lab I2: Chemisorption

For each laboratory (excluding the investigation lab), the following should be addressed as applicable in the presentations:

1- Perform the calculations and data analysis as required as per the results section of the lab manual for each lab
2- Comment on errors involved in the experiment
3- Suggest practical strategies to reduce the experimental errors
4- Comment on the most challenging parts of the experiment
5- Discuss the possible ways to improve the quality of the experiment

UG-Policy-Framework-Missed-Classes-Late-Work-and-Academic-Integrity.pdf **provides information on:**

I. **Absence/Late Accommodation Policy**
II. **Religious Accommodation**
III. **Academic Integrity**
IV. **Academic Offences**
V. **Faculty of Engineering AI Policy**
VI. **Accessibility**
VII. **Inclusivity, Diversity, and Respect**
VIII. **Health and Well-Being,**

Important Contacts

Important Links