

CHEE 218 – LABORATORY PROJECTS I

Course Syllabus – Winter 2022

This is your course syllabus. Please download the file and keep it for future reference.

LAND ACKNOWLEDGEMENT

Queen's University is situated on traditional Anishinaabe and Haudenosaunee Territory.
See: <http://www.queensu.ca/encyclopedia/t/traditional-territories>

INCLUSIVITY STATEMENT

Queen's students, faculty, and staff come from every imaginable background – small towns and suburbs, urban high rises, Indigenous communities, and from more than 100 countries around the world. You belong here: <https://www.queensu.ca/inclusive/>.

TEACHING TEAM

COURSE INSTRUCTOR

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For an up-to-date list of personnel, please check the course website.

CHEE 218 (W 0.15-2-0.35 2.5)

COURSE DESCRIPTION

The projects provide a practical introduction to processes that occur in chemical engineering operations. Bench-scale and pilot plant equipment are used. Students plan and carry out the experiments, analyze the data and prepare written reports.

Prerequisites APSC 100 (or APSC 102), CHEE 209, or permission of the department.

(0/0/10/20/0) (Mathematics/Natural Sciences/Complementary Studies/Engineering Science/Engineering Design)

COURSE LEARNING OUTCOMES (CLO)

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

CLO	DESCRIPTION	INDICATORS
CLO 1	Demonstrate proficiency in operation and control of process and analytical equipment.	ET-Create ET-Apply ET-Limitations
CLO 2	Demonstrate engineering judgment and an awareness of the nature and magnitude of physical and chemical effects and factors, as well as errors and uncertainties.	PA Formulate PA-Evaluate
CLO 3	Collect and interpret data to draw meaningful conclusions and evaluate the strengths, weaknesses and limitations of current chemical engineering theory.	IN-Conduct IN-Analyze IN-Synthesis
CLO 4	Write concise, coherent and grammatically correct lab reports that reflect critical analysis and synthesis. Deliver clear and organized formal oral presentations.	CO-Written CO-Spoken
CLO 5	Demonstrate effective independent learning, initiative, originality and creativity in completion of pre-lab preparation and other tasks.	LL-Information
CLO 6	Work effectively as group member and demonstrate good leadership skills when team leader, adopting a professional approach during all project phases.	TW-Contribution TW-Feedback PR-Interpersonal
CLO 7	Document and follow appropriate safety protocols.	IN-Safety

This course develops the following attributes at the 2nd year level:

Problem Analysis (PA):

PA-Formulate Develop appropriate frameworks for solving complex engineering problems.

PA-Evaluate Analyze solutions to complex engineering problems to draw conclusions.

Investigation (IN):

IN-Conduct Conduct investigations to test hypotheses related to complex problems

IN-Analyze Analyze and interpret data using appropriate techniques and tools

IN-Synthesis Synthesize information from investigations considering sources of uncertainty and limitations to reach substantiated conclusions.

IN-Safety Adhere to appropriate workplace safety protocols in all work environments.

Engineering Tools (ET):

ET-Create Develop, adapt and/or extend appropriate software, equipment, models, and simulations for a range of engineering activities.

ET-Apply Apply and manage appropriate techniques, apparatus, databases, models, tools, and/or processes to accomplish a task.

ET-Limitations Evaluate limitations and errors of instrumentation/measurement techniques/models/ simulations to assess appropriateness of the results.

Individual and teamwork (TW):

TW-Contribution Take initiative to plan, organize and complete tasks, as an individual and team member, in order to meet goals

TW-Feedback Share ideas and information by eliciting, giving and applying positive and effective feedback.

Communications (CO):

CO-Written Produce clear, concise, precise and well-organized written communication with language appropriate for the audience.

CO-Spoken Deliver formal and informal oral presentations with suitable language, content, style, timing and flow, while adapting format, content and tone to audience and purpose.

Professionalism (PR):

PR-Interpersonal Demonstrate professional conduct and integrity.

Life-long learning (LL):

LL-Information Identify, organize, and critically evaluate information from an appropriate range of sources, to meet learning needs.

RELEVANCE TO THE PROGRAM

This course provides opportunities for students to apply much of the engineering science knowledge gained from most of their previous and current core courses, and to exercise and develop engineering judgment, in the operation and analysis of real chemical engineering processes. The structure of the course requires students to approach their lab project work like practicing engineers, hence contributing to the development of communication skills and professionalism they will need to become effective engineers.

COURSE EVALUATION

ASSESSMENT WEIGHTING

Deliverable*	Week or Date	Weight	Alignment with CLOs
Course orientation and safety briefing quiz	1 st week of classes	3%	
Four formal technical laboratory reports (19.25% per lab project)	see course term schedule table for due dates	77%	1, 2, 3, 4, 5
Preparation, teamwork and safety practices (5.0 % per lab project)	"	20%	3, 4, 6, 7

* See course onQ (D2L) website for assessment descriptions.

GRADING

All assessments in this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to the established [Grade Point Index](#).

Feedback on Assessments

The Project Supervisors will provide feedback on graded activities on onQ. You can expect feedback on your assessments within ten to fourteen days of the due date.

Accessing Your Final Grade

Your final grades will show on SOLUS. Official transcripts showing final grades will be available on the Official Grade Release Date at the end of term.

COURSE MATERIALS

Required Textbook

- No textbook required

The main information resource for CHEE 218 is the course onQ (D2L) website. Information related to deliverable expectations, evaluation rubrics, safety, schedules, project information, etc. can all be found in content modules on the course onQ website.

Other technical information related to lab projects can be found in published scientific literature and materials on reserve at Queen's Stauffer Library.

Required Hardware/Software

Students must have a reliable [internet connection and hardware](#) that are compatible with online learning requirements.

Suggested Time Commitment

Learners can expect to invest on average 7-9 hours per week in this course.

COURSE STRUCTURE AND ACTIVITIES

There are no regularly scheduled lectures for this course. There are mandatory course orientation and safety presentations during the 1st week of term. After the course orientation quiz is completed, teams consisting of 3 or 4 students are assigned by the course instructor. These teams remain together for the term and perform 4 of the available engineering lab experiments.

Teams are expected to function independently during all phases of their projects, but are permitted to consult with their Project Supervisor (TA) if they have difficulties related to technical aspects of their project, or with one of the Chemical Engineering Technologists if they have apparatus-related issues.

The Course Instructor is available to consult with on matters related to evaluation disputes, team dynamics, deadline extensions and penalties, clarification of course policies, etc.

The term is divided evenly into 4 project periods/rounds. A team leader is designated by the group for each project (everyone must serve as team leader at least once).

All laboratory projects involve completion of the following main tasks:

- Laboratory project preparation/research
- An oral presentation of project objectives and plans for procedures and analysis to the Project Supervisor (TA)
- Laboratory/experimental work
- Formal technical report preparation & submission
- All Students individually submit a peer evaluation.

EXPECTATIONS FOR PRE-LAB/LAB WORK/FINAL DELIVERABLES

The preparation and experimental aspects of the project will be completed as a team in all four project rounds. However, individual reports will be submitted by each group member for the 1st project round. Submission of an individual report will allow each team member to demonstrate their individual written communication skills. The 2nd, 3rd, and 4th project rounds each require the submission of a single group-prepared report.

COURSE COMMUNICATION

NETIQUETTE

In this course, you may be expected to communicate with your peers (lab group members) and the teaching team (Project Supervisors, Chemical Engineering Technologists & Course Instructor) through electronic communication. You are expected to use the utmost respect in your dealings with your colleagues or when participating in activities, discussions, and online communication.

Following is a list of netiquette guidelines. Please read them carefully and use them to guide your online communication in this course and beyond.

1. Make a personal commitment to learn about, understand, and support your peers.
2. Assume the best of others and expect the best of them.
3. Acknowledge the impact of oppression on the lives of other people and make sure your writing is respectful and inclusive.
4. Recognize and value the experiences, abilities, and knowledge each person brings.
5. Pay close attention to what your peers write before you respond. Think through and re-read your writings before you post or send them to others.
6. It's alright to disagree with ideas, but do not make personal attacks.
7. Be open to be challenged or confronted on your ideas and challenge others with the intent of facilitating growth. Do not demean or embarrass others.
8. Encourage others to develop and share their ideas.

QUESTIONS ABOUT COURSE MATERIAL

Questions or comments regarding the course structure, requirements, policies, etc. should be addressed with the Course Instructor. Questions related to technical aspects of your lab project should be address with your Project Supervisor or, if equipment-related, one of the Chemical Engineering Technologists.

COURSE ANNOUNCEMENTS

The instructor will post course news in the Announcements section on the main course homepage on onQ. Please sign up to be automatically notified by email when the instructor posts new information in onQ Announcements.

OFFICE HOURS

Use e-mail to arrange meeting times with the Course Instructor, your Project Supervisor, or one of the Chemical Engineering Technologists.

CONFIDENTIAL MATTERS

If you have a confidential matter you would like to discuss with your instructor, their contact details are on the first page of this document. Expect email replies within 48 hours.

COURSE POLICIES

Please review the following policies concerning copyright, academic integrity, absences and academic accommodations:

COPYRIGHT

The material presented in this course is intended for use as part of the course at Queen's University and is the property of the instructor unless otherwise stated. Copying this material for distribution (e.g. uploading material to a commercial third-party website) can lead to a violation of Copyright law and constitutes a violation of Academic Integrity.

ACADEMIC INTEGRITY

As an engineering student, you have made a decision to join us in the profession of engineering, a long-respected profession with high standards of behaviour. As future engineers, we expect you to behave with integrity at all times. Please note that Engineers have a duty to:

- Act at all times with devotion to the high ideals of personal honour and professional integrity.
- Give proper credit for engineering work

The standard of behaviour expected of professional engineers is explained in the [Professional Engineers Ontario Code of Ethics](#). Information on policies concerning academic integrity is available in the [Queen's University Code of Conduct](#), in the [Senate Academic Integrity Policy Statement](#), on the [Faculty of Engineering and Applied Science website](#), and from your instructor.

Departures from academic integrity include plagiarism, use of unauthorized materials or services, facilitation, forgery, falsification, unauthorized use of intellectual property, and collaboration, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the University.

LATE POLICY

Unless other arrangements have been approved, [departmental policies](#) regarding late and missed assignments, and missed quizzes/exams will be followed. In the event of extenuating circumstances, you may request an extension to an assignment due date without penalty. Requests must be made to your instructor prior to the original due date of the assignment, and some substantiating documentation is often required (see information below on absences). Note that unacceptable reasons include extra-curricular activities, travel plans, generally behind on schoolwork, etc. In the absence of substantiating documentation, the normal late penalty will apply as described in the assignment or departmental policies.

ABSENCES (ACADEMIC CONSIDERATIONS) AND ACADEMIC ACCOMMODATIONS

For absences and academic accommodations please review the information on the [FEAS website](#).

ACADEMIC AND STUDENT SUPPORT

Queen's has a robust set of supports available to you including the [Library](#), [Student Academic Success Services \(Learning Strategies and Writing Centre\)](#), and [Career Services](#). Learners are encouraged to visit the Faculty of Engineering and Applied Science [Current Students](#) web portal for information about various other policies such as academic advisors, registration, student exchanges, awards and scholarships, etc.

INDIVIDUAL NEEDS AND SUPPORT

If you have a disability or health-related condition that may require academic accommodations, please approach the [Queen's Accessibility Services](#). The staff at Accessibility Services are available by appointment to develop individualized accommodation plans, provide referrals, and assist with advocacy. The sooner you let us know your needs, the better we can assist you in achieving your learning goals. For questions or assistance with requesting Academic Consideration or Accommodation, contact the FEAS Academic Accommodation Coordinator at engineering.aac@queensu.ca

Every effort has been made to provide course materials that are accessible. For further information on accessibility compliance of the educational technologies used in this course, please consult the links below.

EDUCATIONAL TECHNOLOGY	ACCESSIBILITY COMPLIANCE INFORMATION
onQ (Brightspace Learning Management System by D2L)	https://www.d2l.com/accessibility/standards/
Zoom	https://zoom.us/accessibility

If you find any element of this course difficult to access, please discuss with your instructor how you can obtain an accommodation.

RELIGIOUS OBSERVANCE

Students in need of accommodation for religious observance are asked to speak to their professor within a week of receiving their syllabus. Note also that alternative assignments are considered a "reasonable accommodation" under the Ontario Human Rights Code. Students with questions about their rights and responsibilities regarding religious accommodation should contact Chaplain Kate Johnson via Chaplain@queensu.ca.

TECHNICAL SUPPORT

Some basic comfort level with basic hardware and software skills are required for this course. If you require technical assistance, please contact [Technical Support](#).

SUPPORTIVE PERSONAL COUNSELLING

If at any time you find yourself feeling overwhelmed, anxious, sad, lonely, or distressed, consider confidential supportive counselling offered by the [embedded counselors](#) at the Student Wellness Service Faculty of Engineering and Applied Science.