UNSW Course Outline

CHEN6701 Advanced Reaction Engineering - 2024

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General Course Information

Course Code : CHEN6701
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Chemical Engineering
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate, Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This elective course builds on students' core knowledge of reaction engineering and is designed to give an advanced insight into the design, optimisation and operation of reaction vessels used in chemical, biological, as well as material processing industries.

Topics covered include the analysis of complex industrial reaction kinetics, effect of micromixing on reactive systems, non-isothermal reactor design, nonlinear analysis in reaction systems, catalytic processes, multiphase (gas-liquid-solid) reactors for single and multiple reactions, strategies for reactor optimisation and case studies in industrial process reactor design and operation.

This elective course is geared towards senior undergraduate students with interests in the design and optimisation of reaction vessels and the underlying theoretical concepts. The course is also suitable for Master and PhD research students with interests in chemical, environmental and biological reaction engineering.

Course Aims

Reaction Engineering is one of the core subjects that differentiates chemical engineers and industrial chemists from other engineering disciplines. The majority of chemical processes involve at least one chemical reaction and depends on kinetic processes. This course is designed to give you an **advanced insight into the design, optimization and operation of reaction vessel used in chemicals/petrochemicals, biological/food as well as materials/minerals processing industries**.

The **Foundational Topics** of the course will cover the analysis of complex industrial reaction kinetics, effect of micro mixing on reactive systems, non-isothermal reactor design, nonlinear analysis in reaction systems, (bio)catalytic processes, multiphase (gas-liquid-solid) reactors for single and multiple reactions, strategies for reactor optimization and case studies in industrial process reactor design and operation.

The **Applied Topics** have been selected for their relevance to reaction engineering, their technical novelty and the significance in real life applications. They present current research trends based on key engineering principles and highlight the application for example to clean energy production, water purification and catalysis. These seminars will be presented by guest speakers from our school that are experts in their area, and who will give you valuable insights into these fundamental and applied reaction engineering-related topics.

Relationship to Other Courses

This course builds on core knowledge in reaction engineering and is an elective course in the chemical engineering and industrial chemistry programmes. Pre-requisites: CEIC2005

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply advanced kinetic and thermodynamic principles to simulate the progress of chemical reactions various reactor designs.
CLO2 : Explain the underlying principles of (bio)catalytic processes
CLO3 : Interpret and asses non-ideal and non-isothermal reactor designs, as well as the concepts of recycle reactors
CLO4 : Categorize various complex reactions patterns like autocatalytic reactions, parallel and multiple reactions.
CLO5 : Contextualize reaction engineering problems and approach them outside the immediate boundaries of the core course content
CLO6 : Reflect and judge on the broader impact of advanced engineering concepts to society, economy and environment
CLO7 : Analyse engineering innovations and plan (depending on their level of development) how they can be put in industrial practice
CLO8 : Assess and communicate gained knowledge and in-depth understanding of innovative engineering concepts via multiple forms of professional communication.

Course Learning Outcomes	Assessment Item
CLO1 : Apply advanced kinetic and thermodynamic principles to simulate the progress of chemical reactions various reactor designs.	
CLO2 : Explain the underlying principles of (bio)catalytic processes	
CLO3 : Interpret and asses non-ideal and non-isothermal reactor designs, as well as the concepts of recycle reactors	
CLO4 : Categorize various complex reactions patterns like autocatalytic reactions, parallel and multiple reactions.	
CLO5 : Contextualize reaction engineering problems and approach them outside the immediate boundaries of the core course content	
CLO6 : Reflect and judge on the broader impact of advanced engineering concepts to society, economy and environment	
CLO7 : Analyse engineering innovations and plan (depending on their level of development) how they can be put in industrial practice	
CLO8 : Assess and communicate gained knowledge and in-depth understanding of innovative engineering concepts via multiple forms of professional communication.	

Learning and Teaching Technologies

Moodle - Learning Management System

Other Professional Outcomes

Course Mapping – Alignment of CLO with Engineers Australia Stage 1 Competencies

Each of the CLOs is aligned with at least one of the Engineers Australia (EA) Stage 1 Competencies Elements (SOCE) for the Professional Engineers (the specific competency element is indicated by number following each learning outcome).

Learning Outcome	LO Statement	Engineers Australia Competencies
CLO 1	Apply advanced kinetic and thermodynamic principles to simulate the progress of chemical reactions various reactor designs.	1.1, 1.3, 2.1
CLO 2	Explain the underlying principles of (bio)catalytic processes	1.1, 1.3
CLO 3	Interpret and asses non-ideal and non-isothermal reactor designs, as well as the concepts of recycle reactors	1.1, 1.3, 2.1
CLO 4	Categorize various complex reactions patterns like autocatalytic reactions, parallel and multiple reactions.	1.3, 2.1
CLO 5	Contextualize reaction engineering problems and approach them outside the immediate boundaries of the core course content	1.4, 2.3
CLO 6	Reflect and judge on the broader impact of advanced engineering concepts to society, economy and environment	1.6, 2.3, 3.1
CLO 7	Analyse engineering innovations and plan (depending on their level of development) how they can be put in industrial practice	2.2, 2.4, 3.3, 3.4
CLO 8	Assess and communicate gained knowledge and in-depth understanding of innovative engineering concepts via multiple forms of professional communication.	3.2, 3.5, 3.6

Alignment of General Learning Outcomes with Activities and Assessments

Learning Outcome	Activities	Assessment
Knowledge of specific course content	Lectures	Online Quizzes
Ability to identify, formulate and solve reaction engineering problems from 1st principles	Lectures Tutorial Problems	Mid-Term Exam
Ability to contextualize engineering problems and approach them outside the immediate boundaries of the course content	Appl. Topics Seminars / Case Studies	Group Presentation Group Report
Ability to apply engineering concepts in a wide setting: social, environmental, economic	Appl. Topics Seminars / Case Studies	Group Presentation Group Report
Technical writing	Collaborative Report Writing	Group Report
Ability to identify information and ability required to succeed in a task (i.e. literature data, ability to collaborate, provide constructive feedbacks)	Collaborative Report Writing	Group Report
Ability to communicate effectively	Presentation Preparation	Group Presentation

https://www.engineersaustralia.org.au/sites/default/files/resource-files/2017-03/Stage%201%20Competency%20Standards.pdf

Additional Course Information

Competence

Students are expected to enter CHEN6701 having developed competencies in all the material covered in the pre-requisite courses, at least. Little time is available to remediate any deficiencies in your knowledge of those topics. Over the course of the term, you will be developing new competencies and to illustrate the standards we expect, marking rubrics or guidelines will be provided for all assessments. The teaching staff will apply these marking guides fairly and provide you with feedback so you can continue to improve over the term and beyond.

Time Commitment

UNSW expects students to spend approximately 150 hours to successfully complete a 6 UOC course like CHEN6701. Per week, we expect approx. 4 hours to be spent participating in face-to-face classes and tutorials and 1 hours completing online quizzes, exams and the group presentation. Therefore, outside class you should be spending at least 10 hours per week working on private study of the lecture and tutorial material, the written assessments and

preparing for the mid-term exam.
 Moodle has the activities for each week clearly laid out to help you keep pace
Success in CHEN6701 means continual work through the term, completing all lessons and tutorial questions in the corresponding week rather than getting behind and then hoping to catch up.

Participation and Team Project

When you attend face-to-face classes, we expect you to actively participate in the activities organised. This may mean listening, taking notes, asking questions or engaging in peer discussions. It may also mean working by yourself or in groups on tutorial exercises.
To complete the group assignment, you are required to work in a team. We expect all team members to agree on how they will manage the team (e.g. making and documenting decisions), to assign the project work equitably and contribute to the delivery of project outputs to the best of their ability.
Students are expected to contribute to online discussions through the course forum on MS Teams. You may wish to discuss challenges faced through this course, ask questions about course content, discuss solutions to tutorial and practice questions. It is expected that students will help each other, and the lecturers will contribute as required.

Attendance and Punctuality

We expect students to attend and view all lectures and tutorials. University commitments take precedence over regular work activities, holidays etc. Students who attend less than 80% of their possible classes may be refused final assessment. If you miss a class, we expect you to catch up in your time. Lectures are recorded and made available online.

Integrity and Respect

The UNSW Student Code of Conduct (https://student.unsw.edu.au/conduct) among other things, expects all students to demonstrate integrity in all the academic work and to treat all staff, students and visitors to the University with courtesy, tolerance and respect.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quizzes Assessment Format: Individual	10%	Due Date: Week 1, Week 3, Week 5
Mid-Term Exam Assessment Format: Individual	30%	Due Date: Week 8
Group Presentation Assessment Format: Group	20%	Due Date: Week 10
Group Report Assessment Format: Group	40%	Due Date: Week 11

Assessment Details

Quizzes

Assessment Overview

Mostly multiple answer questions on topics presented in lectures and seminars. Quizzes will be available online along the course duration.

It is a formative assessment on technical content (knowledge, comprehension, application) with the objectives of helping students to gauge their progress and provide timely feedback.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Mid-Term Exam

Assessment Overview

The exam will be assessed based on the technical accuracy of calculations and evidence of good engineering judgement with assumptions and problem simplification.

Required skills will be practiced during lectures and through working on sample questions. It is a summative assessment of technical content (knowledge, comprehension, application).

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Group Presentation

Assessment Overview

The topics for the Group Presentation and the corresponding Group Report (see below) can be either selected from the range of Applied Topics Seminars that were presented during the course or can be based on a self-selected innovative engineering concept.
 Students will work in self-selected groups of 4 (same as for the Group Report)

It is both a formative and summative assessment. It will provide an occasion for student to practice and demonstrate presentation skills and to receive feedback on their approach and the selected topic. This activity is designed as a collaborative learning workshop and will include, as an additional learning experience, both peer advice and peer marking between all attendees.
 Assessment weight = 30% peer marking + 70% instructor marking

Generative AI Permission Level

Planning/Design Assistance

You are permitted to use generative AI tools, software or services to generate initial ideas, structures, or outlines. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e., what is generated by the tool, software or service should not be a part of your final submission. You should keep copies of your iterations to show your Course Authority if there is any uncertainty about the originality of your work.
If your Convenor has concerns that your answer contains passages of AI-generated text or media that have not been sufficiently modified you may be asked to explain your work, but we recognise that you are permitted to use AI generated text and media as a starting point and some traces may remain. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

Group Report

Assessment Overview

The Group Report is based on the same topic as the Group Presentation and should provide an in-depth analysis of a selected innovative engineering concept.
 Students will work in self-selected groups of 4 (same as for the Group Presentation)

The report should describe the general nature of the problem/challenge, the discussion of possible approaches/solutions and a potential future implementation in your chosen setting as part of a case study.
Participation of course seminars and use of suggested and self-selected reading materials will support students in the preparation of this task.

It is a summative assessment of the ability to apply engineering concepts in a wide setting, technical writing, to source and use literature data. The levels of learning tested include knowledge, comprehension, application to broad areas, analysis, synthesis and evaluation.

Detailed Assessment Description

 Individual contributions will be honoured with the submission of a Contribution Statement Form

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.
If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

General Assessment Information

Assessment criteria and standards

 IMPORTANT: Information on assessment criteria and marking rubrics will be provided separately on Moodle.

 IMPORTANT: Exact open and close dates of assessments will be shown in the respective sections on Moodle.

The course implements a range of formative and summative assessments. Grades are distributed between different small formative assesment tasks to encourage students to engage with the course material consistenlty during the semester, to allow practicing the different skills the course aims to support and provide timely feedbacks. Formative assesment tasks have been designed to contribute directly to the body of knowdlege, resources and capabilities required to address the summative assesment tasks.

Summative assesments have been devised consistently with the iterative and, to a certain degree, self directed, process that characterizes engineering tasks in working environments. Students participate in the evalaution of their own work and that of their peers. The task offers opportunities for deep engagemnet with the topic selected and for broadening views through the revision of the work of others.

All assessments will be completed online. No hard copy submissions are required. The student gateway provides more detail on the UNSW grading system and assessment policy.

Submission of assessment tasks
All written work will be submitted for assessment via Moodle unless otherwise specified. If you are unable to submit the work via Moodle, you should email the work to the project coordinator as soon as possible. The time the email is received will be considered the submission time. If the final is too big to email, you can share it via your UNSW OneDrive.

Some assessments will require you to complete the work online and it may be difficult for the course coordinator to intervene in the system after the due date. You should ensure that you are familiar with assessment systems well before the due date. If you do this, you will have time to get assistance before the assessment closes.

When you submit work through Moodle for assessment you are assumed to be assenting to the standard plagiarism declaration. A copy of the plagiarism declaration is available from this course's Moodle page. You should not include a plagiarism declaration with your submissions as it will lead to false positives in the plagiarism detection system.

Late penalty
Submissions received after the due date and time will be penalised at a rate of 5% per day or part thereof. This penalty is capped at five days (120 hours), after which a student cannot submit an

assessment, and no variation is permitted.

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Activity	Foundational Topics (Tue): Introduction / Reaction Kinetics Applied Topics (Thu): Membrane Reactors Assessments: Quiz 1 (3%) (Membrane Reactor Quiz A+B+C)
Week 2 : 16 September - 22 September	Activity	Foundational Topics (Tue): Catalysis / Enzymes Applied Topics (Thu): Membrane Reactors (Class Workshop) Assessments: -
Week 3 : 23 September - 29 September	Activity	Foundational Topics (Tue): Ideal Reactors (Batch + CSTR + PFR) Applied Topics (Thu): Hydrogen Production / Storage Assessments: Quiz 2 (2%)
Week 4 : 30 September - 6 October	Activity	Foundational Topics (Tue): Reactors in Series Applied Topics (Thu): Photo-Catalysis Assessments: -
Week 5 : 7 October - 13 October	Activity	Foundational Topics (Tue): Recycle Reactors & Autocatalysis / Multiple Reactions Applied Topics (Thu): Plasma-Catalysis Assessments: Quiz 3 (5%)
Week 6 : 14 October - 20 October	Activity	Flexibility Week (Q&A Session)
Week 7 : 21 October - 27 October	Activity	Foundational Topics (Tue): Non-isothermal Systems Applied Topics (Thu): Solid and Liquid based Electronics and Optics Assessments: -
Week 8 : 28 October - 3 November	Activity	Foundational Topics (Tue): Q&A Session (Mid-Term Exam and Group Assignment) Applied Topics (Thu): Mid-Term Exam Assessments: Mid-Term Exam (Thu)
Week 9 : 4 November - 10 November	Activity	Foundational Topics (Tue): Q&A Session (Group Assignment) Applied Topics (Thu): Mathematical Modelling of ChemEng Processes Assessments: -
Week 10 : 11 November - 17 November	Activity	Foundational Topics (Tue): Group Presentation Applied Topics (Thu): Group Presentation Assessments: Group Presentation (Tue+Thu)
Week 11 : 18 November - 24 November	Activity	Foundational Topics (Tue): - Applied Topics (Thu): - Assessments: Group Report (Fri)

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Lectures:

Tue 09:00 – 11:00 K-M15-1001 - Myers Thtr

Thu 09:00 – 11:00 K-F10-M11 - Griff M11

Tutorials:

Wed 13:00 – 14:00 K-F8-389 - Law389 AND K-F8-275 - Law275

Teaching times and locations: https://timetable.unsw.edu.au/2024/CHEN6701.html

Course Resources

Recommended Resources

Online resources

Videos, lecture slides and suggested readings, tutorial exercises and solutions, plus links to other online resources will be provided on the course Moodle page. These will be progressively released as the semester progresses

Recommended texts

There is no set textbook for this course. However, the following texts will be helpful resources in completing the learning activities in this course:

- Levenspiel, O., Chemical Reaction Engineering, 3rd Edition or later – Textbook: The foundational topics will be treated in line with the book's content
- Fogler, S. Elements of Chemical Reaction Engineering (any edition), Wiley – A valuable additional reference

Other resources

You can access the full text of online resources available from the UNSW library using the UNSW VPN Service (https://www.it.unsw.edu.au/staff/vpn/#AccessingLibraryJournals).

Students will require a UNSW approved calculator for the exam.

Course Evaluation and Development

The School of Chemical Engineering evaluates each course each time it is run through (i) myExperience Surveys, and (ii) Focus Group Meetings. As part of the myExperience process, your student evaluations on various aspects of the course are graded; the Course Coordinator prepares a summary report for the Head of School. Any problem areas are identified for remedial action, and ideas for making improvements to the course are noted for action the next time that the course is run. Focus Group Meetings are conducted each term. Student comments on each course are collected and disseminated to the Lecturers concerned, noting any points which can help improve the course.

All of the activities in this course from the online lessons through to the team project have been designed in response to student feedback.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Peter Wich		School of Chemical Engineering	+61 2 938 55664	In person / via MS Teams	No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable

Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures

can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School-specific Information

Course Workload

Course workload is calculated using the Units-Of-Credit (UOC). The normal workload expectation for one UOC is approximately 25 hours per term. This includes class contact hours, private study, other learning activities, preparation and time spent on all assessable work.

Most coursework courses at UNSW are 6 UOC and involve an estimated 150 hours to complete, for both regular and intensive terms. Each course includes a prescribed number of hours per week (h/w) of scheduled face-to-face and/or online contact. Any additional time beyond the prescribed contact hours should be spent in making sure that you understand the lecture material, completing the set assignments, further reading, and revising for any examinations. Most 6 UoC courses will involve approximately 10-12 hours per week of work on your part. If you're not sure what to do in these hours of independent study, the resources on the UNSW Academic Skills pages offer some suggestions including: making summaries of lectures, read/ summarise sections from the textbook, attempt workshop problems, reattempting workshop problems with some hints from the solutions, looking for additional problems in the textbook.

Full-time enrolment at university means that it is a *full-time* occupation for you and so you would typically need to devote 35 hours per week to your studies to suceed. Full-time enrolment at university is definitely incompatible with full-time employment. Part-time/casual employment can certainly fit into your study schedule but you will have to carefully balance your study obligations with that work and decide how much time for leisure, family, and sleep you want left after fullfilling your commitments to study and work. Everyone only gets 168 hours per week; overloading yourself with both study commitments and work commitments leads to poor outcomes and dissatisfaction with both, overtiredness, mental health issues, and general poor

quality of life.

On-campus Class Attendance

Most classes at UNSW are "In Person" and run in a face-to-face mode only. Attendance and participation in the classes is expected. As an evidence-driven engineer or scientist, you'll be interested to know that education research has shown students learn more effectively when they come to class, and less effectively from lecture catch-up recordings. If you have to miss a class due to illness, for example, we expect you to catch up in your time, and within the coming couple of days.

For most courses that are running in an "in person" mode:

- Lectures are normally recorded to provide an opportunity to review material after the lecture; lecture recordings are not a substitute for attending and engaging with the live class.
- Workshops/tutorials are not normally recorded as the activities that are run within those sessions normally cannot be captured by a recording. These activities may also include assessable activities in some or all weeks of the term.
- Laboratories are not recorded and require in-person attendance. Missing laboratory sessions may require you to do a make-up session later in the term; if you miss too many laboratory sessions, it may be necessary to seek a Permitted Withdrawal from the course and reattempt it next year, or end up with an Unsatisfactory Fail for the course.
- Assessments will often require in-person attendance in a timetabled class or a scheduled examination.

Submission of Assessment Tasks

In the School of Chemical Engineering, all written work will be submitted for assessment via Moodle unless otherwise specified. Attaching cover sheets to uploaded work is *not* required unless specifically requested for an individual assessment task; when you submit work through Moodle for assessment you are agreeing to uphold the Student Code.

Some assessments will require you to complete the work online and it may be difficult for the course coordinator to intervene in the system after the due date. You should ensure that you are familiar with assessment systems well before the due date. If you do this, you will have time to get assistance before the assessment closes.

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work and should be treated with respect. Presenting results clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

Please make it easy for the markers who are looking at your work to see your achievement and give you due credit.

Marking guidelines for assignment submissions will be provided at the same time as assignment details to assist with meeting assessable requirements. Submissions will be marked according to the marking guidelines provided.

Academic Integrity

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage (International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013). At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and plagiarism can be located at:

- The Current Students site
- The ELISE training site

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

To help describe what we are looking for, here are some things that we consider to be quite acceptable (even desirable!) actions for many assessments, and some that we consider to be unacceptable in most circumstances. Please check with the instructions for your assessments and your course coordinator if you're unsure. As a rule of thumb, if you don't think you could look the lecturer in the eye and say "this is my own work", then it's not acceptable.

Acceptable actions

 reading/searching through material we have given you, including lecture slides, course notes, sample problems, workshop problem solutions

 reading/searching lecture transcripts

 reading/searching resources that we have pointed you to as part of this course, including textbooks, journal articles, websites

 reading/searching through your own notes for this course

 all of the above, for any previous courses

 using spell checkers, grammar checkers etc to improve the quality of your writing

 studying course material with other students

Unacceptable actions

 asking for help completing an assessment from other students, friends, family

 asking for help on Q&A or homework help websites

 searching for answers to the specific assessment questions online or in shared documents

 copying material from any source into your answers

 using generative AI tools to complete or substantially complete an assessment for you

 paying someone else to do the assessment for you

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism. Further information about referencing styles can be located at https://student.unsw.edu.au/referencing.

For assessments in the School of Chemical Engineering, we recommend the use of referencing software such as Mendeley or EndNote for managing references and citations. Unless required otherwise specified (i.e. in the assignment instructions) students in the School of Chemical Engineering should use either the APA 7th edition, or the American Chemical Society (ACS) referencing style as canonical author-date and numbered styles respectively.

Artificial intelligence tools such as ChatGPT, CodePilot, and built-in tools within Word are modern tools that are useful in some circumstances. In your degree at UNSW, we're teaching you skills that are needed for your professional life, which will include how to use AI tools responsibly plus lots of things that AI tools cannot do for you. AI tools already are (or will soon be) part of professional practice for all of us. However, if we were only teaching you things that AI could do, your degree would be worthless, and you wouldn't have a job in 5 years.

Whether the use of AI tools in an assessment is appropriate will depend on the goals of that assessment. As ever, you should discuss this with your lecturers – there will certainly be assessments where the use of AI tools is encouraged, as well as others where it would interfere with your learning and place you at a disadvantage later. Our goal is to help you learn how to ethically and professionally use the tools available to you. To learn more about the use of AI, see this discussion we have written where we analyse the strengths and weaknesses of generative AI tools and discuss when it is professionally and ethically appropriate to use them.

While AI may might provide useful tools to help with some assessments, UNSW's policy is quite clear that taking the output of generative AI and submitting it as your own work will never be appropriate, just as paying someone else to complete an assessment for you is serious misconduct.

Asking Questions

Asking questions is an important part of learning. Learning to ask good questions and building the confidence to do so in front of others is an important professional skill that you need to develop. The best place to ask questions is during the scheduled classes for this course, with the obvious exception being questions that are private in nature such as special consideration or equitable learning plans. Between classes, you might also think of questions — some of those you might save up for the next class (write them down!), and some of them you might ask in a Q&A channel on Teams or a Q&A forum on Moodle. Please understand that staff won't be able to answer questions on Teams/Moodle immediately but will endeavour to do so during their regular working hours (i.e. probably not at midnight!) and when they are next working on this particular course (i.e. it might be a day or two). Please respect that staff are juggling multiple work responsibilities (teaching more than one course, supervising research students, doing experiments, writing grants, …) and also need to have balance between work and the rest of their life.

School Contact Information

For assistance with enrolment, class registration, progression checks and other administrative matters, please see the Nucleus: Student Hub. They are located inside the Library – first right as you enter the main library entrance. You can also contact them via http://unsw.to/webforms or reserve a place in the face-to-face queue using the UniVerse app.

For course administration matters, please contact the Course Coordinator.

Questions about the this course should normally be asked during the scheduled class so that everyone can benefit from the answer and discussion.