UNSW Course Outline

CEIC2009 Material and Energy Balances in the Chemical Process Industry - 2024

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General Course Information

Course Code : CEIC2009
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 : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Chemical and environmental engineering are concerned with sustainably meeting human needs

through the application of science and technology, as well as understanding how humanity engages and interacts with raw materials and the environment. In doing so, it is critical to reduce demand for energy and resources, prevent pollution and minimise waste. Each of these actions requires an understanding of how material and energy move through natural and chemical processes.

In this course, you will master the foundational principles of material and energy balances, and mass transfer. Through this course you will develop the ability to analyse chemical and other processes whether they involve one or several unit operations, chemical reactions or phase changes, mixing or separation, or recycle, bypass or purge streams. In addition, you will learn how mass transfer mechanisms such as diffusion and convection for fixed and free interfaces, and in one to three dimensions, can be used to explain the movement of material in processes and the environment.

Course Aims

This course aims to develop students' competency and efficiency in analysing and solving engineering problems involving mass transfer (MT), and material and energy balances (MEB), as these foundational skills are essential to the practice of chemical and environmental engineering.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Identify physical, chemical and thermodynamic property models or data required to evaluate balances and transfers of material and energy.
CLO2 : Explain fundamental concepts in thermodynamics and mass transfer, including conservation laws, diffusion, convection, work, heat, enthalpy, phase behaviour and phase changes.
CLO3 : Apply knowledge of units and measurements, foundational mathematical techniques and domain knowledge to carry out calculations in chemical and environmental engineering.
CLO4 : Apply various methods for estimating the rates of mass transfer in solid, liquid and gaseous phases to evaluate and characterise mass transfer phenomena and operations.
CLO5 : Use the principles of steady state material and energy balances to analyse single unit, multi-unit, cyclical and reactive systems involved in common chemical processes.

Course Learning Outcomes	Assessment Item
CLO1 : Identify physical, chemical and thermodynamic property models or data required to evaluate balances and transfers of material and energy.	• Quiz • Assignment • Final Exam
CLO2 : Explain fundamental concepts in thermodynamics and mass transfer, including conservation laws, diffusion, convection, work, heat, enthalpy, phase behaviour and phase changes.	• Quiz • Assignment • Final Exam
CLO3 : Apply knowledge of units and measurements, foundational mathematical techniques and domain knowledge to carry out calculations in chemical and environmental engineering.	• Quiz • Assignment • Final Exam
CLO4 : Apply various methods for estimating the rates of mass transfer in solid, liquid and gaseous phases to evaluate and characterise mass transfer phenomena and operations.	• Quiz • Assignment • Final Exam
CLO5 : Use the principles of steady state material and energy balances to analyse single unit, multi-unit, cyclical and reactive systems involved in common chemical processes.	• Quiz • Assignment • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching strategies

The course has online and face-to-face components. The online materials cover the basic concepts (“building blocks”) that you need to understand properly to make sense of the more complex concepts, examples and problems dealt with in lectures and tutorials.

The topics of MT and MEB will be taught in parallel to allow students the maximum time to absorb and understand the large number of new concepts introduced in this course. A heavy emphasis will be placed on solving practical problems to reinforce the theory covered in the lectures.

Tutorials run each week, both in-person and online with repeated content, primarily for not only reinforcing but also extending the material covered in lectures, so it is essential for you to attempt the tutorial problems. Tutorial solutions will be provided to assist in your learning. Please note that detailed answers to questions and tutorials will be given during class, as well as be posted online.

This course is focused on problem analysis and computational aspects and not on rote knowledge. Quiz and assignment will be conducted to assess your understanding of the topics and to provide you with feedback on your progress.

The rationale behind the approach to learning and teaching

“In terms of learning outcomes, what the student does is more important than what the teacher does”. It is critically important to successful learning that students obtain a lot of practicewith progressively harder problems over the duration of the course. The rationale behind the approach to learning and teaching is to start with simple examples (easy material) before introducing the generalized approach (more abstract ideas) necessary to solve new problem types.

Other Professional Outcomes

SLO1 Demonstrate knowledge and expertise in the use of the methods, tools and ideas from chemistry, mathematics, physics, and computing that underpin chemical engineering.

SLO2 Solve chemical engineering problems by competent application of technical knowledge in material and energy balances, thermodynamics, fluid mechanics, particulate flow, chemical reaction engineering, transport phenomena, separation technologies, process equipment selection, process modelling, process simulation, process control, economic analysis, and safety analysis.

SLO3 Demonstrate expertise in the design of chemical engineering systems, using established

methods to create and document solutions that are technically feasible, appropriate, safe, sustainable, economically viable, socially acceptable, and standards-compliant.

SLO4 Use systems thinking to guide engineering practice, including articulating financial and technical constraints on process design, analysing competitor processes to identify opportunities in market and technologies, developing process improvement plans, and liaising with product engineers to select appropriate process designs.

Engineers Australia, Professional Engineer Stage 1 Competencies

This course contributes to your development of the following EA Professional Engineer competencies:

- PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline
- PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline
- PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline
- PE1.4 Discernment of knowledge development and research directions within the engineering discipline
- PE2.1 Application of established engineering methods to complex engineering problem solving
- PE2.2 Fluent application of engineering techniques, tools and resources

Additional Course Information

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.

Time commitment

UNSW expects students to spend approximately 150 hours to successfully complete a 6 UOC course like CEIC2009. We expect 40 hours to be spent participating in face-to-face (or online) classes, 20 hours on attending the tutorials and Q&A, 30 hours completing online assignment, quiz and the final exam, with the remaining 50 hours provided for private study, working on the assessments and preparing for the final exam. Therefore, outside class you should be spending at least 7 hours per week working on CEIC2009.

Competence

Students are expected to enter CEIC2009 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.

Participation

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 CEIC2009 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 CEIC2009. 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 be punctual and attend at 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 will be recorded and made available through Moodle.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quiz Assessment Format: Individual	20%	Start Date: 11/10/2024 01:05 PM Due Date: 11/10/2024 02:55 PM
Assignment Assessment Format: Individual Short Extension: Yes (3 days)	20%	Start Date: Not Applicable Due Date: Week 8
Final Exam Assessment Format: Individual	60%	Start Date: Not Applicable Due Date: Exam Period

Assessment Details

Quiz

Assessment Overview

Students will sit an in-class quiz that assesses knowledge and skills from the early weeks of the course. This assessment is designed to provide students with decisive feedback on their progress through grades, comments and solutions.

Course Learning Outcomes

- CLO1 : Identify physical, chemical and thermodynamic property models or data required to evaluate balances and transfers of material and energy.
- CLO2 : Explain fundamental concepts in thermodynamics and mass transfer, including conservation laws, diffusion, convection, work, heat, enthalpy, phase behaviour and phase changes.
- CLO3 : Apply knowledge of units and measurements, foundational mathematical techniques and domain knowledge to carry out calculations in chemical and environmental engineering.
- CLO4 : Apply various methods for estimating the rates of mass transfer in solid, liquid and gaseous phases to evaluate and characterise mass transfer phenomena and operations.
- CLO5 : Use the principles of steady state material and energy balances to analyse single unit, multi-unit, cyclical and reactive systems involved in common chemical processes.

Detailed Assessment Description

There will be only one quiz for this course, which will be carried out during the tutorial in Week 5. The progress test is intended primarily as formative assessment, but is counted towards the final mark at a significant level to encourage students to take it seriously and to discourage last-minute cramming. The quiz covers all content in the course up to and including week 4. In class, closed-book quiz.

Assignment submission Turnitin type

This is not a Turnitin assignment

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.

Assignment

Assessment Overview

Students will complete an assignment consisting of a range of problems in material and energy balances, and mass transfer. The assignment will provide students with feedback on their problem-solving skills, as well as their mastery of course content up to this point. Feedback will be provided via class and individual comments, as well as marks and solutions.

Course Learning Outcomes

- CLO1 : Identify physical, chemical and thermodynamic property models or data required to evaluate balances and transfers of material and energy.
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- CLO5 : Use the principles of steady state material and energy balances to analyse single unit, multi-unit, cyclical and reactive systems involved in common chemical processes.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

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.

Final Exam

Assessment Overview

Students will sit a final exam to certify that students can select and apply knowledge and skills in mass transfer, and material and energy balances to analyse a range of scenarios. In this way, the exam ensures students are well prepared for future studies in chemical and environmental engineering.

Course Learning Outcomes

- CLO1 : Identify physical, chemical and thermodynamic property models or data required to evaluate balances and transfers of material and energy.
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- CLO4 : Apply various methods for estimating the rates of mass transfer in solid, liquid and gaseous phases to evaluate and characterise mass transfer phenomena and operations.
- CLO5 : Use the principles of steady state material and energy balances to analyse single unit, multi-unit, cyclical and reactive systems involved in common chemical processes.

Detailed Assessment Description

A final exam is given because the course learning outcomes include a significant level of technical learning that can be effectively assessed in an exam environment and because exams have high reliability. It is primarily designed to align with UNSW graduate attributes 2 and 3. The final exam is closed book. The exam covers all of the parts of the course.

Assignment submission Turnitin type

Not Applicable

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.

General Assessment Information

Grading Basis

Standard

Requirements to pass course

50 marks to pass the course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	MEB Introduction to Material Balance (MB).
	Lecture	MT Introduction to Mass Transfer.
	Tutorial	MT Tut 1
Week 2 : 16 September - 22 September	Lecture	MT One-dimensional steady state mass transfer.
	Lecture	MEB Basic principles of MB.
	Tutorial	MEB Tut 1
Week 3 : 23 September - 29 September	Lecture	MT Diffusion coefficient.
	Lecture	MEB Strategies to solve MB.
	Tutorial	MT Tut 2
Week 4 : 30 September - 6 October	Lecture	MEB MB with chemical reactions.
	Lecture	MT Introduction to Mass Transfer Coefficient.
	Tutorial	MB Tut 2
Week 5 : 7 October - 13 October	Lecture	MEB Balances on multiple units.
	Lecture	MT Mass transfer coefficient continued.
	Assessment	In class, closed book quiz covering material up to and inclusive of week 4. 20% of assessment mark.
Week 6 : 14 October - 20 October	Other	Flexibility week.
Week 7 : 21 October - 27 October	Lecture	MEB Ideal gases and change of phase.
	Lecture	MT 3D unsteady state mass transfer.
	Tutorial	MT Tut 3
Week 8 : 28 October - 3 November	Lecture	MEB Including energy balances in the analysis.
	Lecture	MT 3D unsteady state mass transfer continued.
	Tutorial	MEB Tut 3
Week 9 : 4 November - 10 November	Lecture	MEB Getting enthalpy and heats of solution.
	Lecture	MT Dealing with convention and developing correlations.
	Tutorial	MT Tut 4
Week 10 : 11 November - 17 November	Lecture	MEB Using MEB to solve practical problems.
	Lecture	MT Dealing with convention and developing correlations continued.
	Tutorial	MEB Tut 4

Attendance Requirements

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

General Schedule Information

Class sequence is listed below. The lectures will be face-to-face, and all course materials will be recorded for viewing on Moodle. Tutorial and Q&A times are listed at the end of this schedule.

Course Resources

Prescribed Resources

Felder, R.M., and Rousseau, R.W., “Elementary Principles of Chemical Processes”, John Wiley & Sons, Singapore, 2000.

Himmelblau, D.M. and Riggs, J.B., “Basic Principles and Calculations in Chemical Engineering”, 7th Edition,Prentice Hall, 2004.

Hines, A.L. and Maddox, R.N., “Mass Transfer: Fundamentals and Applications”, Prentice-Hall, 1985.

Recommended Resources

Several useful texts and reference works are listed under the Leganto link on the Moodle page, entitled “Resources, including textbook and electronic reference works”

Students seeking additional resources can also obtain assistance from the UNSW Library. One starting point for assistance is:

http://www.library.unsw.edu.au/servicesfor/students.html

Course Evaluation and Development

During the term, the student can send feedbacks directly to the teachers, and necesary acts will be carried out immediately to address their concerns to improve the learning experience.

The overall feedback regarding the course will also be collected via MyExperience survey, which can be used as guidelines for further improvements and changes.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Graeme Bushell		Hilmer Building, room 219	029385921	Via email or by appointment	Yes	Yes
Lecturer	Edgar Wong		Science and Engineering Building E8 Office 436		Via email or by appointment	No	No

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.