UNSW Course Outline

CEIC8104 Topics in Polymer Technology - 2024

Published on the 22 May 2024

General Course Information

Course Code : CEIC8104
Year : 2024
Term : Term 2
Teaching Period : T2
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, Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Polymers are a central part of today's economy, enabling many of the technologies and materials that make up our everyday lives. But polymers are much more than just the simple packaging plastics that might first come to mind. Today's polymers are amazingly adaptable chemicals that

can be tuned and synthesised for some truly amazing applications.

This course focuses on the chemical reactions, mechanisms, and industrial techniques used to synthesise some of the more industrially important polymeric materials. While the course will deal primarily with chemistry, some polymer physics and properties will also be discussed. The course will start with an introduction to polymer science where you will learn what constitutes a polymer, what different classes of polymers exist and what general polymerisation strategies are open to the industrial chemist. The course will then explore step and chain polymerisation, including polycondensation, polyaddition, cationic and anionic chain polymerisation, as well as radical polymerisation. You will also study the industrially important process of copolymerisation in greater depth. In addition, we will discuss methods to analyse polymers, such as size exclusion chromatography. The course will finish with basic structure-property relationships for polymers, as well as introduce the concept of viscoelastic materials – the cornerstone for rubbers, elastomers, and thermoplastic materials.

This course is designed to give insight into the fundamentals of polymer science and therefore suitable for everybody without prior knowledge in polymers. The course would be of particular appeal to students interested in basic polymer chemistry as well as polymer related areas such as material science and the coating/paint industry, nanotechnology, biomaterials, membrane and separation science, as well as the packaging material industries.

Course Aims

The aim of this course is to allow students to understand the breadth of polymers available today, how they are produced, and how their properties are determined, through a combination of theoretical and laboratory-based tasks. This course will introduce students to the wide breadth of polymeric materials that are ubiquitous in modern society while gaining familiarity with common methods of polymer synthesis. Furthermore, this course will also allow students to understand the industrial aspects of large-scale polymer synthesis. Emphasis is placed on developing understanding of relationships between polymer structure and material properties. This course is the prerequisite for CEIC8105 which delves deeper into polymer design and polymer synthesis.

Relationship to Other Courses

A good knowledge of organic chemistry is required. Prospective students should have completed CHEM1A and B or alternatively MATS1101 and CEIC1001 or equivalent. This course will be required if you want to complete CEIC8105.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Identify the main different types of polymers and how they are typically synthesized
CLO2 : Describe fundamental mechanisms related to polymerisation via the main types of polymerisation, and how polymerisation methods/conditions can be related to polymer structure / characteristics (e.g. molecular weight)
CLO3 : Perform the basics of polymerisation reactions, analyse the outcomes, and optimise the reaction conditions pursuant to a typical polymer engineer
CLO4 : Describe how main structural features of polymers determine their physical properties

Course Learning Outcomes	Assessment Item
CLO1 : Identify the main different types of polymers and how they are typically synthesized	• Ionic, Metallocene and Insertion Polymerization assignment • Radical Polymerization and Step-wise Polymerization assignment • Final Exam
CLO2 : Describe fundamental mechanisms related to polymerisation via the main types of polymerisation, and how polymerisation methods/conditions can be related to polymer structure / characteristics (e.g. molecular weight)	• Ionic, Metallocene and Insertion Polymerization assignment • Radical Polymerization and Step-wise Polymerization assignment • Final Exam
CLO3 : Perform the basics of polymerisation reactions, analyse the outcomes, and optimise the reaction conditions pursuant to a typical polymer engineer	• Lab
CLO4 : Describe how main structural features of polymers determine their physical properties	• Ionic, Metallocene and Insertion Polymerization assignment • Radical Polymerization and Step-wise Polymerization assignment • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Moodle - Learning Management System | Blackboard Collaborate | Microsoft Teams

Learning and Teaching in this course

Learning and teaching activities

The main aim of this course is not the memorisation of content and reactions. While there are

some kinetic equations that the students may wish to memorise, this course is more about understanding the underlying concepts in polymer science, and developing these concepts so as to establish broader links between polymer science and other industrial engineering subjects. To achieve this goal the student needs to be critical about the content of the course and distinguish between information only and bigger concepts, which help to apply knowledge to new challenges, which the students have never been exposed to before.

There are a number of different learning/teaching activities:

1. Traditional lectures, where the lecturer will explain the material using power point slides. These slides will be available in Moodle.
2. Tutorials: Problems to work on (worksheet) will be available on Moodle for each week. The idea is that the students work on these problems before/during class, at which time the lecturer with explain/elaborate on how to solve the problems / answer the questions. These tutorials will comprise a significant interactive element.
3. Laboratory component: The student will conduct laboratory work under close supervision of lab demonstrators, and will subsequently prepare lab reports (explained in detail during the course and on Moodle).
4. Assignments: Two assignments will be given – each is to be completed and submitted in a timely fashion as per instructions provided during the course.

Expectations of students

- Attend lectures and tutorials
- Attend lab classes – carefully follow instructions of lab demonstrators
- Complete and submit assignments and lab reports according to deadlines

Other Professional Outcomes

1. **Professional Outcomes:**

PE1: Knowledge and Skill Base

- PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
- PE1.2 In-depth understanding of specialist bodies of knowledge
- PE1.3 Discernment of knowledge development and research directions

PE2: Engineering Application Ability

- PE2.1 Application of systematic approaches to the conduct and management of engineering projects

PE3: Professional and Personal Attributes

- PE3.1 Ethical conduct and professional accountability
- PE3.2 Effective oral and written communication (professional and lay domains)
- PE3.3 Effective team membership and team leadership

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Ionic, Metallocene and Insertion Polymerization assignment Assessment Format: Individual	15%	Start Date: Not Applicable Due Date: 21/06/2024 11:59 AM
Radical Polymerization and Step-wise Polymerization assignment Assessment Format: Individual	15%	Start Date: Not Applicable Due Date: 19/07/2024 11:59 AM
Lab Assessment Format: Group	30%	Start Date: Not Applicable Due Date: To be confirmed
Final Exam Assessment Format: Individual	40%	Start Date: Not Applicable Due Date: Exam Period

Assessment Details

Ionic, Metallocene and Insertion Polymerization assignment

Assessment Overview

The students are given a range of exercises and challenges on ionic, metallocene, insertion polymerization. The student is required to individually complete the task using lecture notes and text books. The student should demonstrate capability of applying the theoretical background to specific problems.

Course Learning Outcomes

- CLO1 : Identify the main different types of polymers and how they are typically synthesized
- CLO2 : Describe fundamental mechanisms related to polymerisation via the main types of polymerisation, and how polymerisation methods/conditions can be related to polymer structure / characteristics (e.g. molecular weight)
- CLO4 : Describe how main structural features of polymers determine their physical properties

Detailed Assessment Description

The assessment criteria: The students are given a range of exercises and challenges on polymer synthesis to be answered individually. The student is required to complete the task using lecture notes and text books. The student should demonstrate capability of applying the theoretical background to specific problems.

Deadline for absolute fail: 7 days after the due date.

Date of marks returned: maximum 2 weeks after the assignement was submitted.

Penalty for late submission: 5% per day for late submission

Assessment information

The assignment should be submitted via Moodle - Assignment 2.

Assignment submission Turnitin type

Not Applicable

Radical Polymerization and Step-wise Polymerization assignment

Assessment Overview

The students are given a range of exercises and challenges on radical polymerization and step-wise polymerization. The student is required to individually complete the task using lecture notes and text books. The student should demonstrate capability of applying the theoretical background to specific problems.

Course Learning Outcomes

- CLO1 : Identify the main different types of polymers and how they are typically synthesized
- CLO2 : Describe fundamental mechanisms related to polymerisation via the main types of polymerisation, and how polymerisation methods/conditions can be related to polymer structure / characteristics (e.g. molecular weight)
- CLO4 : Describe how main structural features of polymers determine their physical properties

Detailed Assessment Description

The assessment criteria: The students are given a range of exercises and challenges on polymer synthesis to be answered individually. The student is required to complete the task using lecture notes and text books. The student should demonstrate capability of applying the theoretical background to specific problems.

Deadline for absolute fail: 7 days after the due date.

Date of marks returned: maximum 2 weeks after the assignement was submitted.

Penalty for late submission: 5% per day for late submission

Assessment information

The assignment should be submitted via Moodle - Assignment 1.

Assignment submission Turnitin type

Not Applicable

Lab

Assessment Overview

The students are required to carry out lab experiments in small groups. The student must demonstrate that they understand the underlying theory and that they are capable of summarising theory and interpret experimental results in written form.

All three lab reports (submitted as one) are due 14 days after the last lab has been completed (i.e., submission deadline is different for each lab group). See Moodle for further details.

Course Learning Outcomes

- CLO3 : Perform the basics of polymerisation reactions, analyse the outcomes, and optimise the reaction conditions pursuant to a typical polymer engineer

Detailed Assessment Description

The assessment criteria: The students are required to carry out lab experiments in small groups. The student has to demonstrate that they understand the underlying theory and that they are capable to summarize theory and experiment in written form.

Marking: Each group will submit one final report which will regroup the 3 lab reports. Each group member will receive the same mark.

Deadline for absolute fail: 21 days after the last lab has been completed (i.e. submission deadline is different for each lab group).

Date of marks returned: maximum 3 weeks after the lab report was submitted.

Penalty for late submission: 5% per day for late submission

Submission notes

All three lab reports (submitted as one) are due 14 days after the last lab has been completed (i.e. submission deadline is different for each lab group). See Moodle for further details.

Assessment information

Submission requirements, upload via Moodle.

Assignment submission Turnitin type

Not Applicable

Final Exam

Assessment Overview

Students will answer a range of questions under exam conditions covering the lecture and workshop material. The exam is designed to ensure students have sufficient knowledge of the subject matter for future courses and/or projects.

Course Learning Outcomes

- CLO1 : Identify the main different types of polymers and how they are typically synthesized
- CLO2 : Describe fundamental mechanisms related to polymerisation via the main types of polymerisation, and how polymerisation methods/conditions can be related to polymer structure / characteristics (e.g. molecular weight)
- CLO4 : Describe how main structural features of polymers determine their physical properties

Detailed Assessment Description

The assessment criteria: Students are required to participate in a final exam lasting 2 hours. This exam will comprise questions and problems based on the lectures and tutorial notes, aimed at evaluating their comprehension of the theory and their ability to solve technical challenges. It is important to note that the final exam will be a closed-book examination.

Date of marks returned: maximum 2 weeks after the final exam

Submission notes

Date of exam to be confirmed - Exam period

Assessment information

The final exam will be during the exam period. It is important to note that the final exam will be a closed-book examination.

A final exam is given because the course learning outcomes include a significant level of technical learning which can be effectively assessed in an exam environment, and because exams have high reliability.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Grading Basis

Standard

Requirements to pass course

Achieve a composite mark of at least 50 out of 100

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Cyrille Boyer Content: Introduction, Logistics and Basics
	Lecture	Lectures: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Cyrille Boyer Content: Chain Polymerisation: Ionic polymerisation
	Tutorial	No Tutorial
	Laboratory	Content: Compulsary - Safety induction Lab induction: Wed 11:00am - 12:00pm Location: Science & Engineering 103
Week 2 : 3 June - 9 June	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Cyrille Boyer Content: Chain Polymerisation: Ionic polymerisation
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Cyrille Boyer Content: Chain Polymerisation: Ionic polymerisation
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Cyrille Boyer
	Laboratory	Lab component of this course will take place over three days for each lab group. It involves the preparation of polymers with techniques that have been introduced in POLY3000. Additionally, the polymers will be analysed using viscometry and GPC instruments. Finally, thermal analysis of some typical industrial polymers will also be performed by the students. There are three separate labs – Lab#1, Lab#2 and Lab#3. The students will be divided into lab groups that will work together - this will be explained at the safety introduction meeting in Week 1. Lab #1: SEB building, lab 103. Polycondensation and radical polymerisation. Lab #2: CAMD laboratories (meet by elevators on Level 3 in SEB). GPC and viscometry Lab #3: CAMD laboratories (meet by elevators on Level 3 in SEB). Thermal behaviour of polymers
Week 3 : 10 June - 16 June	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Cyrille Boyer Content: Chain Polymerisation: Ionic polymerisation
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Cyrille Boyer
	Laboratory	The lab component of this course will take place over three days for each lab group.
Week 4 : 17 June - 23 June	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Nathaniel Corrigan Content: Step polymerization
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Nathaniel Corrigan Content: Step polymerization
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Nathaniel Corrigan
	Assessment	Assessment 1 Due date: Friday Week 4 at 12pm
Week 5 : 24 June - 30 June	Lecture	Lecture Time: Mon1 1:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Nathaniel Corrigan Content: Step polymerization
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202

		Lecturer: Nathaniel Corrigan Content: Step polymerization
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Nathaniel Corrigan
	Laboratory	
Week 7 : 8 July - 14 July	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Nathaniel Corrigan Content: Step polymerization
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Nathaniel Corrigan Content: Metallocene and Insertion Polymerisation
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Nathaniel Corrigan
	Laboratory	
Week 8 : 15 July - 21 July	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Nathaniel Corrigan Content: Metallocene and Insertion Polymerisation
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Nathaniel Corrigan Content: Metallocene and Insertion Polymerisation
	Tutorial	Tutorial Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Nathaniel Corrigan
	Assessment	Assessment 2 Due date: Friday Week 8 at 12pm
Week 9 : 22 July - 28 July	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Cyrille Boyer Content: Radical polymerisation
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Cyrille Boyer Content: Radical polymerisation
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Cyrille Boyer
	Laboratory	
Week 10 : 29 July - 4 August	Lecture	Lecture Time: Mon 11:00am - 1:00pm Location: Tyree Energy Technology LG03 Lecturer: Cyrille Boyer Content: Radical polymerisation
	Lecture	Lecture Time: Wed 2:00pm - 4:00pm Location: Ainsworth 202 Lecturer: Cyrille Boyer Content: Structure-Property Relationships
	Tutorial	Tutorial Time: Fri 1:00pm - 2:00pm Location: Mathews 103 Lecturer: Cyrille Boyer
	Laboratory	

Attendance Requirements

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

General Schedule Information

Lectures:

- **Monday** 11:00am - 1:00pm - Location: Tyree Energy Technology LG03
- **Wednesday** 2:00pm - 4:00pm - Location: Ainsworth 202

Tutorials:

- Friday 1:00pm - 2:00pm - Location: Mathews 103

Labs: Shedule will be provided in Week 1

- **Lab #1:** SEB building, lab 103. Polycondensation and radical polymerisation.
- **Lab #2:** Chem Eng laboratories (meet by elevators on Level 3 in SEB). GPC and viscometry
- **Lab #3:** Chem Eng laboratories (meet by elevators on Level 3 in SEB). Thermal behaviour of polymers
- Note: The students will be divided into lab groups that will work together - this will be explained at the safety introduction meeting in Week 1. All three labs are compulsory.

Course Resources

Prescribed Resources

Principles of Polymerization by Odian is the “gold standard” of polymer chemistry, and will be the primary source of material for much of the course. However, several other textbooks will also be employed.

Reference: Odian, G, Principles of Polymerization, 3rd Ed., Wiley

The course is based on the lecture material.

- The students are expected to attend the lectures since the lecture notes provided cannot replace attendance. Students are encouraged to ask questions during the lecture. However, if questions are not answered to the satisfaction of the student, the student is required to use textbooks or other resources.
- The tutorial (workshop) is designed to be interactive. The students are expected to prepare the answers to the workshop questions independently at home. During the workshop, the students will discuss the workshop questions together with the workshop leader. The workshop should be a forum for discussion, which should allow students to clarify remaining

questions from the lecturer.

Recommended Resources

Examination of any of the following introductory textbooks is highly recommended, with the more heavily applicable textbooks to the course marked with an asterisk (*).

- *Odian, G, Principles of Polymerization, 3rd Ed., Wiley
- *Sperling, L H, Introduction to Physical Polymer Science, 2nd Ed, Wiley
- *Billmeyer, F W, Textbook of Polymer Science, 3rd Ed, Wiley
- Stevens, M P, Polymer Chemistry, An Introduction, 3rd Ed., Oxford
- *Rodriguez, F, Principles of Polymer Systems, 3rd Ed., hpc
- Brydson, J A, Plastics Materials, 5,6 or 7th Ed, Butterworths
- Allcock H R and Lampe, F W, Contemporary Polymer Chemistry, 3rd Ed., Prentice Hall
- Rudin, A., Elements of Polymer Science and Engineering, Academic Press
- Elias, H-G, An Introduction to Polymer Science, VCH

Course Evaluation and Development

Student feedback will be collected via MyExperience surveys.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lecturer	Cyrille Boyer		Office 333 (level 3, SEB)	N/A	Contact via email	No	Yes
	Nathaniel Corrigan		Office 318 (SEB, level 3)	N/A	Contact via email	No	No
Demonstrator	Kenny Lee		SEB		By appointment via email	No	No
	Di Wu		SEC		By appointment via email	No	No
	Shiwei Han				By appointment via email	No	No
	Yuan Xiu		SEB		By appointment via email	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.