CEIC3007

Chemical Engineering Lab B

Term Two // 2021

School of Chemical Engineering // UNSW Engineering

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Dr Peter Neal	peter.neal@unsw.edu.au	Online every Tuesday of term between 10am-12noon	Hilmer (E10) 216	+61-(0)2-9385-4814

Lecturers

Name	Email	Availability	Location	Phone
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Demonstrators

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Ms Rabiatul 'Adawiah (Ruby) Mat Noor	r.matnoor@unsw.edu.au			
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Lab Staff

Name	Email	Availability	Location	Phone
Mr Andrew Chau	h.chau@unsw.edu.au			

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.

If circumstances outside your control impact on submitting assessments, Special Consideration may be granted, usually in the form of an extension or a supplementary assessment. Applications for Special Consideration must be submitted online.

For course administration matters, please contact the Course Coordinator.

Course Details

Credit Points 6

Summary of the Course

A key part of the professional practice of chemical engineering is the ability to investigate problems. Sometimes these investigations occur on the desktop (e.g. researching design options, simulating processes or developing techno-economic models). Other investigations involve the collection and analysis of data from natural phenomena, equipment or product testing, or process operations. As professional chemical engineers you will be called upon to lead, plan and execute engineering projects investigating opportunities for process development and improvement. It's our bread and butter.

In this course you will develop and extend your skills in designing and executing experimental investigations of chemical engineering problems using small pilot-scale unit operations and analytical equipment. You will work in a team to conduct and document three experimental projects. Each team in your class will complete a different set of projects; however, they are all designed to achieve the same learning outcomes. The experimental projects in this course have an open-ended nature and will require you to plan and execute laboratory work over one or two three-hour lab sessions in consecutive weeks.

This course will further develop your skills in analysis, critical thinking, communication and teamwork. This will be achieved through preparing and presenting an experimental proposal, collaborating in laboratory environment to execute your plan, and documenting and reflecting on your results in a technical report. Direct feedback will be provided the demonstrator in charge of your experimental project, with additional feedback and grades provided through Moodle. The course concludes with a seminar where each team will reflect on their learning over the term.

Course Aims

This course aims to:

- Develop your ability to design and execute experimental investigations in accordance with applicable safety and ethical standards, and
- Develop students' professional skills in analysis, critical thinking, communication and teamwork.

Course Learning Outcomes

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. Execute experimental work with high ethical standards (UNSW code of conduct as guide) within constraints of time and available equipment	PE1.4, PE2.1, PE3.1
2. Demonstrate skills in safe and correct execution of laboratory experiments	PE2.2
3. Design compliant risk management strategies in the frame of WH&S legislation	PE2.2

Learning Outcome	EA Stage 1 Competencies
4. Demonstrate ability to combine skills of individual peers toward the effective planning and execution of experiments	PE2.4, PE3.6
5. Ability to integrate theoretical knowledge to choose and assemble the right equipment and analytical tools to solve problems without pre-determined solutions	PE1.1, PE1.2, PE1.3
6. Defend effective written reports and oral presentations that clearly communicate experimental results, analysis, relationship to theory and choices for specific experimental designs	PE3.2, PE3.4

Pre-requisite courses and assumed knowledge

The only pre-requisite course is CEIC2007 Chemical Engineering Laboratory A. However, this course does build on content you studied in other courses within the chemical engineering specialisation, namely

- CEIC3001 – particularly, the content on separation processes
- CEIC3005 – everything, except process economics, and
- MATH2089 – statistics

In addition, we assume that you are studying or have studied

- CEIC3006 – the Experiment C will involve some aspect of process control.

Relationship with the discipline and the rest of your program

A key part of the professional practice of chemical engineering is the ability to investigate problems. Sometimes these investigations occur on the desktop (e.g. researching design options, simulating processes or developing techno-economic models). Other investigations involve the collection and analysis of data from natural phenomena, equipment or product testing, or process operations. CEIC3007 builds on the experimental and data analysis skills you developed in your first-year science courses and in CEIC2007. This course also builds on your teamwork, project management and communication skills developed in your design courses.

This course also provides practical experience with the technologies studied from a theoretical and design perspective in other courses. For example, some of the experiments involve a distillation column for which you have studied the principles of operation in CEIC3001 and will study the design of in CEIC3004. There will also be opportunity to compare the performance of a real-world unit with the predictions of a process model or simulation, as you developed in CEIC3000 and CEIC3005. Finally, the final experiment in the course will give you some practical experience of process dynamics and control and will apply some of your early learning in CEIC3006. This course also allows you to develop your professional skills in communication, teamwork and project management.

Teaching Strategies

This is an experiential, enquiry-based learning course structured around three experimental projects. The experiments are longer and more complex than those in CEIC2007. In this way, CEIC3007 builds on the experimental and data analysis skills you developed in your science and maths courses, and in

CEIC2007. The skills in experimental design and practice you develop in this course will be employed and extended in your final year thesis project. This feeds into your professional practice as a chemical engineer where you will contribute to (and eventually lead) projects in process design, development and improvement, requiring a set of well-developed enquiry skills.

Rationale

Enquiry-based learning can be thought of as a spectrum (Banchi & Bell, 2008) from highly constrained demonstrations (or confirmation-level enquiries) through to the largely unconstrained projects like thesis or DP (or open-level enquiries). The change across this spectrum is the degree to which the student directs the enquiry. Thus in comparison to CEIC2007, CEIC3007 will require you to take more responsibility for the design of the experiments, and for analysing and interpreting your results to address the aim(s).

Further, enquiry-based activities move through several phases (Pedaste et al., 2015), namely Orientation, Conceptualisation, Investigation and Conclusion, as well as Discussion. To a certain extent, this framework is analogous to the five phases of classic project management theory (Orientation = Initiating, Conceptualisation = Planning, Investigation = Executing, Discussion = Monitoring and Controlling, and Conclusion = Closing) These phases and the teaching strategies in each of them are outlined below.

To maximise your experiential learning, we have structured this course around three experimental projects. Experiential learning can be thought of as a spiral (Passarelli & Kolb, 2012). It begins with Concrete Experience(s) by the self or others, which moves into Reflective Observation where you think about the experience and start asking questions, then comes Abstract Conceptualisation where you link your reflections with the learning of others (team mates, literature, industry practice) and construct interpretative theories of the experience, and finally Active Experimentation where you plan how to put your learning into practice and hypothesise about the outcomes of future concrete experiences.

The three experiments in CEIC3007 serve as three learning cycles where you can apply your learning about experimental investigation from one cycle in subsequent cycles. Then each experiment consists of multiple cycles – the orientation and conceptualisation phases are one cycle, and the investigation and conclusion phases another. At an even smaller level, the two multi-week experiments provide extra cycles within the investigation phase. At the other end of the scale, the whole course with it's introductory material, the three experiments and the final reflective seminar means that the entire course is also a learning cycle. And if each course is an experiential learning cycle, then your degree is also a learning cycle. It's learning cycle inception!

Orientation / Initiating

To prepare you for the safety and ethical demands of this course, we have an introductory quiz to confim you understand what it means to conduct experimental investigations in a safe manner, and in a way that demonstrates academic and research integrity.

For each experiment, we provide you with an online lesson to orient you to the experiment's aims, background theory and the apparatus. You will have an opportunity to be briefed by the lab manger on the safe and effective operation of the equipment you will be using. This will take place during your regular lab time, the week before your first session for that experiment.

Conceptualisation / Planning

To ensure you're ready for your lab sessions we expect you to complete online lessons and their associated quizzes, as well as preparing an experimental proposal and a risk management form. This preparation work will require you to perform a review of relevant literature to learn about the process you're investigating and the analytical techniques you will use. You will also need to think about how you will plan your experiment over one or two weeks. Your preparation will be verified by your demonstrator through listening to your proposal presentation and asking questions of each team member. Through this session they will also validate whether your proposed plan is likely to answer the experimental aim(s). You will receive feedback on how to improve your experimental plan and risk management.

Investigation / Executing

During your lab sessions you will execute your experimental plan. These sessions are designed to give you practical experiences in feed preparation, sample calibration, operating equipment, recording data and observations, and analysing samples. These sessions are also designed to give you experience of operating, controlling and improving the performance of unit operations of increasing complexity. In this way, we are preparing you for managing the operation of industrial scale unit operations.

Discussion / Monitoring and Controlling

During your lab session, your demonstrator will be available to answer questions and ensure compliance with safety expectations. They will also ask you questions to check your understanding, highlight interesting phenomena, and guide your through the experience.

Following your lab session, you will write either a team or individual report. The purpose of these reports is for you to practice the analysis and interpretation of real data, and consolidate your understanding of the experiment. The report also provides an opportunity for you to discuss outcomes and limitations of your experiments in a literature and industrial context.

Conclusion / Close

Each experimental project closes with you submitting your report. Your demonstrator will grade it and provide you with feedback during your regular lab time in the week after your final lab session for that experiment. This session will also be when you initate your next experimental project with a briefing on the next experiment's equipment.

At the end of semester is the seminar. This activity is designed to help you consolidate and reflect on your learning across the entire term. Drawing lessons from not just individual experiments but also looking at what you've learnt through all the different experiential learning cycles in this course, and engage in Active Experimentation - thinking about how you'll put what you've learnt into practice.

Additional Course Information

Integrity, Respect and Inclusion

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.

Teams may include a member who is participating remotely for the first two experiments. Teams are expected to include this member in their lab experiences (preferably via live video streams) and in team discussions/meetings.

Time commitment

UNSW expects students to spend approximately 150 hours to successfully complete a 6 UOC course like CEIC3007. Completing the three experimental projects will require approximately 30-40 hours in-class contact hours. This time will be spent in inductions and briefings, presenting your experimental plan and progress updates to your demonstrator, as well as actually conducting the experiment and analysing samples. This leaves a significant portion of the course (110-120 hours or at least 10 hours per week) to be completed outside of class. You will spend this time working through provided preparation materials, reviewing background material they find, preparing your experimental plan, reviewing interim results and refining the experimental plan, writing up your findings in reports, and preparing for the final seminar.

Competence

Students are expected to enter CEIC3007 having developed competencies in all the material covered in the pre-requisite courses, at least. In addition, this course will draw on skills and content from other third year courses. 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

To complete the experimental projects, 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. Your contribution to the team will be peer evaluated throughout the course - the scores from these evaluations will be used to convert your team marks to individual marks.

In the laboratory, students are expected to make productive use of their time, conducting their experiments in a way that does injury anyone and does not damage the equipment.

For two week experiments -

- After the first session working on a given problem, teams should process their initial results and refine their experimental plan for the following week.
- Following the second session, students will finish analysing their results and prepare a report and/or presentation.

Students are expected to contribute to online discussions through the course forum on Teams. You may wish to discuss challenges faced through this course, ask questions about course content, discuss solutions to problems encountered. 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 experimental and ‘marking’ sessions. 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.

Assessment

Successful completion of online pre-lab quizzes, risk assessment and experimental planning are required prior to each of three experimental projects. This preparation work will require you to perform a review of relevant literature to learn about the process you're investigating and the analytical techniques you will use. You will also need to think about how you will plan your work out over two weeks.

Before starting each experiment, teams will present an experimental plan using visual aids to a demonstrator and answer their questions. These presentations will be conducted online during the scheduled Tuesday "seminar" time as noted in the course schedule. Upon successfully completing this oral defence, your team can commence your experiment.

Each experimental project will be carried out one (experiment A) or two (experiments B and C) 3-hour laboratory sessions in consecutive weeks. Each week you will begin by meeting with your demonstrator to discuss your reflection of the previous week (of preparation, or of experimentation and analysis). Before you leave each week, you will again meet with your demonstrator to debrief and discuss your plans for the following week.

Following the submission of your report, you will meet with your demonstrator during your regular lab time. Your demonstrator will provide you with feedback on your report. You will also have an opportunity to inspect the rig for the next experiment.

Assessment Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
Introductory quiz	5%	10am Tuesday, Week 2	1, 2
Experiment proposals	30%	Due in Tuesday class of weeks 2, 4 and 8	2, 3, 4, 5
Technical reports	45%	Due in weeks 3, 7 and 10, five days after the corresponding lab session in the previous teaching week.	4, 5, 6
Seminar	20%	During your lab time in Week 11	1, 6

Assessment Details

Assessment 1: Introductory quiz

Details:

Individual assessment of student's knowledge of academic and research integrity, as well as general and laboratory workplace health and safety.

Additional details:

Complete online modules on laboratory safety awareness and working with academic integrity before attempting the quiz. You will need to provide evidence of completion of each course.

Successful completion of these modules is required prior to your being permitted to enter the lab.

Start early to allow the resolution of unexpected problems.

Submission notes: Completed as a Moodle quiz.

Assessment 2: Experiment proposals

Start date: Not Applicable

Length: 20 minutes

Details:

Students present and defend their proposed work plan to experiment demonstrator. Oral proposals and defence for three experiments at 10% each. Proposals are group assessed with the answering of questions assessed individually. Team mark is moderated by peer assessment.

Satisfactory performance is required for admission to the lab.

Submission notes:

Submit your risk management form and presentation slides in separate activities on Moodle.

The presentation will be conducted as a Teams meeting in your team's private channel. Allow your demonstrator to initiative the meeting.

Assessment 3: Technical reports

Start date: Not Applicable

Details:

Students will write a technical report documenting the results of their experimental investigations and interpreting their meaning (15% each). The Experiment A and Experiment C reports will be individual submissions and the Experiment B report will be a team submission. The team report marks will be moderated by peer assessment.

Submission notes: Submit your report as a Word file through the Turnitin activity on Moodle.

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

Assessment 4: Seminar

Length: 20 minute presentation, plus 10 minutes for questions

Details:

Students will give a team-based presentation reflecting on their learning over the course of the term in general, and their three experiments in particular. The presentation will be given to the rest of their class and their demonstrators. The presentation will be followed by Q&A with the audience.

Submission notes: Submit your slides in activity on Moodle.

Attendance Requirements

Attendance is required at demonstrator meetings and briefings, and lab classes. If you are unable to attend for reasons beyond your control, please apply for special consideration.

Course Schedule

[View class timetable]

Timetable

Date	Type	Content
O Week: 25 May - 28 May	Online Activity	Workplace Health and Safety (WHS) and Working With Academic Integrity (WWAI) training - links under "Getting started" in moodle. Review the course outline.
Week 1: 31 May - 4 June	Lecture	Course welcome, orientation.
	Tut-Lab	Laboratory induction and Experiment A briefing
	Assessment	Validation quiz (WHS & WWAI)
	Homework	Preparation for Experiment A, including online lesson and preparing experimental proposal.
Week 2: 7 June - 11 June	Lecture	Experiment A proposal presentation (including risk assessment) to demonstrator. Individual assessment (maximum 30 minutes per team).
	Tut-Lab	EXPERIMENT A LABORATORY
	Homework	Calibration and analysis of experimental samples (to be organised by a member of your team, in consultation with Andrew Chau). Reflect, and write up experiment.
Week 3: 14 June - 18 June	Assessment	Individual experiment A report due (5 days after your lab).
	Tut-Lab	Meet with your lab demonstrator online to discuss and receive feedback on your experiment A (suggested: 20 minutes). Attend lab for Experiment B/C briefing.
	Homework	Preparation for Experiment B/C, including online lesson and preparing experimental proposal.
Week 4: 21 June - 25 June	Lecture	Experiment B/C proposal presentation (including risk assessment) to demonstrator. Individual assessment (maximum 30 minutes per team).
	Tut-Lab	EXPERIMENT B/C LABORATORY SESSION 1
	Homework	Calibration and analysis of experimental samples (to be scheduled by a member of your team, with Andrew Chau). Analysis and review of plan.
Week 5: 28 June - 2 July	Lecture	Experiment B/C progress meeting with your demonstrator (or do this at the start of your next lab session).

	Tut-Lab	EXPERIMENT B/C LABORATORY SESSION 2
	Homework	Calibration and analysis of experimental samples (to be scheduled by a member of your team, with Andrew Chau). Reflect, and write up experiment.
Week 6: 5 July - 9 July	Lecture	Online consultation time (no fixed agenda). Join if you want help with anything.
Week 7: 12 July - 16 July	Lecture	Online consultation time (no fixed agenda). Join if you want help with anything.
	Assessment	Group Experiment B/C report due (a week and 5 days after your lab).
	Tut-Lab	Meet with your lab demonstrator online to discuss and receive feedback on your experiment B/C (suggested: 20 minutes). Attend lab for experiment C briefing.
	Homework	Preparation for Experiment B/C, including online lesson and preparing experimental proposal.
Week 8: 19 July - 23 July	Lecture	Experiment B/C proposal presentation (including risk assessment) to demonstrator. Individual assessment (maximum 30 minutes per team).
	Tut-Lab	EXPERIMENT B/C LABORATORY SESSION 1
	Homework	Calibration and analysis of experimental samples (to be scheduled by a member of your team, with Andrew Chau). Analysis and review of plan.
Week 9: 26 July - 30 July	Lecture	Experiment B/C progress meeting with your demonstrator (or do this at the start of your next lab session).
	Tut-Lab	EXPERIMENT B/C LABORATORY SESSION 2
	Homework	Calibration and analysis of experimental samples (to be scheduled by a member of your team, with Andrew Chau). Reflect, and write up experiment.
Week 10: 2 August - 6 August	Lecture	Online consultation time (no fixed agenda). Join if you want help with anything.
	Assessment	Group Experiment B/C report due (5 days after your lab).
	Tut-Lab	Meet with your lab demonstrator online to discuss and receive feedback on your experiment B/C (suggested: 20 minutes).
	Homework	Work with your teammates to prepare your seminar presentation.

Resources

Prescribed Resources

Online lessons, videos and suggested readings, plus links to other online resources will be provided on the course Moodle page (http://moodle.telt.unsw.edu.au/). These will be progressively released as the course progresses.

You are expected to purchase the required PPE if you don't already have it. See " Laboratory Workshop Information" for what PPE is required.

Recommended Resources

There is no set textbook for this course. However, you may find it useful to refer to the recommended texts for the courses mentioned in the following sections:

- Pre-requisite courses and assumed knowledge
- Relationship with the discipline and the rest of your program

Study space for project courses

Students enrolled in selected project- and laboratory-based courses (such as CEIC3007) are granted access to Room 102 on Level 1 of the Science and Engineering Building (Map Ref. E8). Access to this space is subject to the following conditions:

- Students must follow any directions from teaching and technical staff.
- This space is provided for private study and/or small group project meetings related to courses taught by the School of Chemical Engineering.
- Some classes have booked this space and students should vacate the space during these classes.
- Students using the space are expected to leave the space in the same or better condition than they found it. Keeping this in mind, limited consumption of food and drink is permitted.

Failure to observe any of these conditions may result in your access being revoked.

Course Evaluation and Development

This is only the third time we have run this course. Based on student feedback we have:

- Simplified the assessment and reporting
- Increased demonstrator training on experiments and assessment practices
- Shifted the weighting of assessments for proposals and reports

Feedback is sought through in-term course surveys and the myExperience survey at the end of term. However we appreciate feedback at any time! Let us know if there are things we can improve during term and we will do our best to assist.

Laboratory Workshop Information

Laboratory access is during your timetabled hours only, except as explicitly arranged with Andrew Chau.

Lab classes finish strictly at the indicated end time so make sure you plan your work with this in mind. The indicated PPE is mandatory during labs.

The following personal protective equipment is mandatory in laboratory classes:

- safety glasses
- lab coat
- legs covered
- enclosed shoes
- face mask

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 generally not required; 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 due respect. Presenting results clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

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.

Late penalties

Unless otherwise specified, submissions received after the due date and time will be penalised at a rate of 10% per day or part thereof (including weekends). For some activities including Moodle quizzes and Team Evaluation surveys, extensions and late submissions are not possible.

Special consideration

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 submitting an assessment or sitting an exam.

UNSW has a Fit to Sit / Submit rule, which means that if you attempt an exam or submit a piece of assessment, 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.

Please note that students will **not** be required to provide **any** documentary evidence to support absences from any classes missed **because of COVID-19 public health measures such as isolation**. UNSW will **not** be insisting on medical certificates from anyone deemed to be a positive case, or when they have recovered. Such certificates are difficult to obtain and put an unnecessary strain on students and medical staff.

Applications for special consideration **will** be required for assessment and participation absences – but no documentary evidence **for COVID 19 illness or isolation** will be required.

Academic Honesty and Plagiarism

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.

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.

Academic Information

To help you plan your degree, assistance is available from academic advisors in The Nucleus and also in the School of Chemical Engineering.

Additional support for students

- Current Student Gateway
- Engineering Current Student Resources
- Student Support and Success
- Academic Skills
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- IT Service Centre

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.

On-campus class attendance

Physical distancing recommendations must be followed for all face-to-face classes. To ensure this, only students enrolled in those classes will be allowed in the room. Class rosters will be attached to corresponding rooms and circulated among lab demonstrators and tutors. No over-enrolment is allowed in face-to-face class. Students enrolled in online classes can swap their enrolment from online to a **limited** number of on-campus classes by Sunday, Week 1.

In certain classroom and laboratory situations where physical distancing cannot be maintained or the staff running the session believe that it will not be maintained, face masks will be designated by the course coordinator as **mandatory PPE** for students and staff. Students are required to bring and use their own face mask. Mask can be purchased from IGA Supermarket (Map B8, Lower Campus), campus pharmacy (Map F14, Middle Campus), the post office (Map F22, Upper Campus) and a vending machine in the foyer of the Biological Sciences Building (Map E26, Upper Campus).

Your health and the health of those in your class is critically important. You must stay at home if you are sick or have been advised to self-isolate by NSW health or government authorities. Current alerts and a list of hotspots can be found here. Do not come to campus if you have any of the following symptoms: fever (37.5 °C or higher), cough, sore throat, shortness of breath (difficulty breathing), runny nose, loss of taste, or loss of smell. If you need to have a COVID-19 test, you must not come to campus and remain in self-isolation until you receive the results of your test.

You will not be penalised for missing a face-to-face activity due to illness or a requirement to self-

isolate. We will work with you to ensure continuity of learning during your isolation and have plans in place for you to catch up on any content or learning activities you may miss. Where this might not be possible, an application for fee remission may be discussed. Further information is available on any course Moodle or Teams site.
For more information, please refer to the FAQs: https://www.covid-19.unsw.edu.au/safe-return-campus-faqs

Image Credit

Dr Peter Wich

CRICOS

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	
Knowledge and skill base	
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	✓
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	✓
PE2.2 Fluent application of engineering techniques, tools and resources	✓
PE2.3 Application of systematic engineering synthesis and design processes	
PE2.4 Application of systematic approaches to the conduct and management of engineering projects	✓
Professional and personal attributes	
PE3.1 Ethical conduct and professional accountability	✓
PE3.2 Effective oral and written communication in professional and lay domains	✓
PE3.3 Creative, innovative and pro-active demeanour	
PE3.4 Professional use and management of information	✓
PE3.5 Orderly management of self, and professional conduct	
PE3.6 Effective team membership and team leadership	✓