MECH9720

Solar Thermal Energy Design

Term 2, 2022

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Robert Taylor	robert.taylor@unsw.edu.au	By Appointment	402C Ainsworth Building	02 9385 5400

Demonstrators

Name	Email	Availability	Location	Phone
Amr Omar	amr.omar@unsw.edu.au	By Appointment	Willis Annex Office (Lvl. 1)	
David Saldivia Salazar	d.saldiviasalazar@unsw.edu.au	By Appointment	Tyree Building	
Mahdi Motamedi	m.motamedi@unsw.edu.au	By Appointment	Ainsworth Bldg., Room 402	
Muhammad Tauha Ali	mt.ali@unsw.edu.au	By Appointment	Ainsworth 402	

School Contact Information

Location

UNSW Mechanical and Manufacturing Engineering

Ainsworth building J17, Level 1

Above Coffee on Campus

Hours

9:00–5:00pm, Monday–Friday*

*Closed on public holidays, School scheduled events and University Shutdown

Web

School of Mechanical and Manufacturing Engineering

Engineering Student Support Services

Engineering Industrial Training

UNSW Study Abroad and Exchange (for inbound students)

UNSW Future Students

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)

(+61 2) 9385 4097 – School Office**

**Please note that the School Office will not know when/if your course convenor is on campus or available

Email

Engineering Student Support Services – current student enquiries

- e.g. enrolment, progression, 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

School Office – School general office administration enquiries

- NB: the relevant teams listed above must be contacted for all student enquiries. The School will only be able to refer students on to the relevant team if contacted

Important Links

- Student Wellbeing
- Urgent Mental Health & Support
- Equitable Learning Services
- Faculty Transitional Arrangements for COVID-19
- Moodle
- Lab Access
- Computing Facilities
- Student Resources
- Course Outlines
- Makerspace

- UNSW Timetable
- UNSW Handbook

Course Details

Units of Credit 6

Summary of the Course

Solar thermal energy is created when radiation from the sun is either directly or indirectly (via electricity or a chemical intermediaries) converted to heat for applications in the residential, industrial, and commercial sectors. This course will give you an engineering perspective of the solar technologies we use for these demands. The first section of the course deals with the characteristics of sunlight, along with some methods of analysis and measurement of solar radiation. The second section of the course covers the working principles of solar thermal technologies (ranging from low to high cost), introducing the general tools necessary to analyze heat and mass transfer within these devices. Lastly, we will cover how these technologies can be integrated into systems including control, circulation, and storage. The content reflects the experience of the lecturer/demonstrators/guests in the research, development, and installation of these systems.

It should be noted that the course deliberately stays away from photovoltaics (for which UNSW has several advanced courses) and instead focuses on the conversion and use of solar energy as *heat*.

Course Aims

This course aims to provide students with an understanding and working knowledge of the terminology, principles and methods used in solar thermal engineering. It relies heavily on heat transfer analysis (convection, conduction, radiation), which underpins the quantitative components of the course (e.g. student will be required to apply knowledge from Advanced Thermofluids, MECH3610). The course aims to provide an overview of engineering solutions for a wide variety of applications, ranging from pool heating (e.g., heat water to ~30 C) to processing minerals (e.g. Aluminum at >700 C).

This course aims to provide technical analysis techniques for comparing the characteristics of solar radiation, solar collectors, and solar system. To do this, it will provide students with knowledge of the tools (experimental, analytical, simulation) for conducting solar thermal collector efficiency evaluations and for the prediction of long-term performance of solar thermal systems.

It is expected that upon completion of this course, students should be prepared to take on more classes, or pursue a career, in renewable energy technologies and/or the thermal sciences.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Obtain a basic understanding of how to measure and calculate salient radiation properties and data that will allow you to solve solar thermal energy design problems	PE1.1
2. Be able to use engineering terminology associated with solar thermal energy systems	PE1.2, PE1.3

Learning Outcome	EA Stage 1 Competencies
3. Understand and be able to use the terminology associated with solar thermal energy to create a professional report.	PE3.1, PE3.5
4. Apply the above to solar thermal systems from an engineering perspective	PE2.1, PE2.2, PE2.3, PE2.4

Teaching Strategies

The teaching strategies that will be used include:

- Weekly synchronous Lectures/Discussions (Teams) and Demonstration sessions (from Week 2, choice of in-person or on Teams).
- Asynchronous presentation of the material as video recordings of past lectures, in Moodle.
- 25 interactive Lessons, in Moodle
- Course Notes, in Moodle
- A mix of qualitative and quantitative material
    - Quantitative engineering calculations of heat and mass transfer and design trade-offs for these technologies
    - Qualitative considerations of engineering design choices and the market for these technologies
- A virtual 360 and/or face-to-face labs, to conduct testing in accordance with Australian standards for solar thermal collectors
- The use of software tools to solve solar engineering problems

Additional Course Information

In this course we will use the **Teams** channel for most communications (Discussion/Demonstration sessions and continuous Q&A) and **Moodle** as the main file transfer medium (hosting the Lessons, recorded Lectures/Demos, assessment instructions, and also ALL assessment submission will be in **Moodle**).

IMPORTANT NOTE: For **Teams** communications, we will *endeavor to respond to all questions within 1-2 business days.*

Suggested approaches to learning in the course include:

- Careful reading of at least one mode of all course content (Lectures, Lessons, Note, Discussion)
- Carry out all the demonstration problem calculations
- Active participation in the Lab group assessment
- Complete SAM assignment Tasks early
- Additional reading related to the material presented in lectures to broaden the knowledge base
- Conscientiously going through ALL the worked problems
- Perusal of the past examination paper(s), sample Lesson problems, to practice typical Exam questions
- Asking questions and interaction with fellow students in **Teams**

Assessment

Assignment instructions, marking guidelines (rubrics), and other details will be available on **Moodle**, please check in regularly. If deemed necessary, clarifications and/or hints may be provided via **Teams**, so please endeavor to check both **Moodle** and **Teams** regularly during the session.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Weekly Quiz	8%	Week 2, Week 3, Week 4, Week 5, Week 7, Week 8, Week 9, Week 10	1, 2
2. Laboratory Report (Due Week 9)	25%	29/07/2022 05:00 PM	1, 2, 3, 4
3. System Advisor Model Analysis (Task 1 Due Week 5; Task 2 Due Week 7; Task 3 Due Week 10)	27%	Week 5, Week 7, Week 10	1, 2, 3, 4
4. Exam	40%	19/08/2022 05:00 PM	1, 2, 4

Assessment 1: Weekly Quiz

Assessment length: 8 Quizzes, 1-5 questions each
Submission notes: Quiz Closes before the next scheduled lecture time
Due date: Week 2, Week 3, Week 4, Week 5, Week 7, Week 8, Week 9, Week 10
Deadline for absolute fail: Quiz Close (i.e., > 5 days from Quiz Open)
Marks returned: Straight after each Quiz closes

Description: Weekly Moodle quizzes will run from Week 2-Week 10. They will include a mixture of calculated questions, true/false, matching and multiple choice questions which roughly follow along with the Lessons and lectures.

Purpose: To help students stay on track in terms of progress through the course content. Since there are multiple attempts allowed and each individual quiz has low weighting, it provides some feedback on student understanding of the content.

This is not a Turnitin assignment

Assessment criteria

N/A

Additional details

Exact opening due dates/times to be provided in Moodle.

Assessment 2: Laboratory Report (Due Week 9)

Start date: 13/06/2022 09:00 AM
Assessment length: Typically 25-30 pages
Submission notes: Students must also submit a peer review as part of the marking.
Due date: 29/07/2022 05:00 PM
Deadline for absolute fail: > 5 days after Due (see Late Policy)
Marks returned:

Purpose: The purpose of the Laboratory is to measure and calculate the efficiency of 3 types of solar thermal collectors (flat plate, evacuated tube, and parabolic concentrator).

Skills: Students will learn how to measure solar thermal performance data and the analytical procedures (e.g., outlier removal and regression analysis) required to create solar collector efficiency correlation equations, following a process similar to Australian (AS 2535) and International Standards (ISO 9806).

Knowledge: Knowledge of industry practice will be gained from doing the analysis. The final Report will contain the information required from an Accredited Test Lab, a key step that ALL solar thermal collectors sold in Australia must go through to obtain small-scale technology certificates (STCs).

Task Summary: The deliverable is a final Laboratory Report as a group assessment (4-6 students per group), which is similar to a solar collector standardized test report. Some of the marks for this assessment (10%) will come from peer assessment.

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

Assessment criteria

See assessment instructions and rubric.

Additional details

This is a Group assessment.

Assessment 3: System Advisor Model Analysis (Task 1 Due Week 5; Task 2 Due Week 7; Task 3 Due Week 10)

Start date: 13/06/2022 09:00 AM
Assessment length: 3 Tasks (varying pg. limit)
Submission notes: Submit 3 seperate Task Reports (in Moodle)
Due date: Week 5, Week 7, Week 10
Deadline for absolute fail: > 5 days after Due (see Late Policy)
Marks returned:

Purpose: The aim of this assessment is for students to learn how to do a pre-feasibility technoeconomic analysis of the 3 main solar thermal technologies (hot water, industrial process heat, and concentrated solar thermal electricity), assessed as 3 seperate technical reports.

Skills: Use of a software package, the System Advisor Model, which can provide high-level transient analysis of renewable energy systems, utilizing global weather data inputs and detailed cost estimations.

Knowledge: Upon submission, students will know how to conduct a desktop parametric study, and present the findings for, solar thermal systems at a level close to what would be required from a preliminary feasibility report for an engineering procurement and construction (EPC) and/or an engineering consulting firm.

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

Assessment criteria

See assessment instructions and rubric. This is an individual assessment.

Additional details

This is an individual assessment.

Assessment 4: Exam

Start date: 15/08/2022 08:00 AM
Assessment length: ~15 Questions (typically ~4 hours of effort)
Submission notes: Submit at any time within the week (before the deadline).
Due date: 19/08/2022 05:00 PM
Deadline for absolute fail: Exam Close (i.e., > 5 days from Exam Open)
Marks returned: Upon request, after Course marks posted.

Purpose: A final comprehensive assessment of the student knowledge gained throughout the course on solar thermal technologies.

Format: A randomised Moodle Quiz. Open notes, open book. Open for 1 business week 8am Monday to 5pm Friday (Sydney time).

This is not a Turnitin assignment

Assessment criteria

This is an individual assessment with a mix of quantitative and qualitative questions. To obtain full marks, students will be expected to pull together knowledge gained during the course and go beyond this level to make engineering judgments on the feasibility of solar thermal technologies/applications.

Attendance Requirements

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

Course Schedule

View class timetable

Timetable

Date	Type	Content
O-Week: 23 May - 27 May	Module	Moodle course visible to students, including orientation video and Course Notes.
Week 1: 30 May - 3 June	Online Activity	Solar Thermal Overview / 3 Moodle Lessons: Introduction to Solar Energy Systems; Non-Concentrating Solar Thermal Collectors; Concentrating Solar Thermal Collectors
	Lecture	Week 1 Lecture Video.
	Online Activity	Weekly Teams Discussion (attendance optional)
Week 2: 6 June - 10 June	Online Activity	2 Moodle Lessons: The Solar Resource; Black Bodies and Radiation
	Lecture	Week 2 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
Week 3: 13 June - 17 June	Online Activity	2 Moodle Lessons: Solar Instruments and Measurements Part 1 & Part 2
	Lecture	Week 3 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Laboratory	Sydney-based students will have the opportunity to attend a 1-hour in person lab (to be scheduled). [Other students can do the 360

		virtual lab.]
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
Week 4: 20 June - 24 June	Online Activity	2 Moodle Lessons: Inclined Surfaces and Diffuse Radiation Models; Applications of Inclined Surfaces
	Online Activity	Week 4 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Laboratory	Sydney-based students will have the opportunity to attend a 1-hour in person lab (to be scheduled). [Other students can do the 360 virtual lab.]
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
Week 5: 27 June - 1 July	Online Activity	4 Moodle Lessons: Absorber Plates and Reflection; Collector Efficiency and Operation; Solar Collector Heat Losses; Evaluating the Solar Collector Efficiency Factor
	Lecture	Week 5 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Laboratory	Sydney-based students will have the opportunity to attend a 1-hour in person lab (to be scheduled). [Other students can do the 360 virtual lab.]
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
	Assessment	System Advisor Model Analysis (Task 1 Due Week 5; Task 2 Due Week 7; Task 3 Due Week 10): Submit 3 seperate Task Reports (in Moodle)
Week 6: 4 July - 8 July	Online Activity	Flexibility week. Revision of previous content.
Week 7: 11 July - 15	Online Activity	2 Moodle Lessons: Collector Stagnation

July		Temperature, Part 1 & Part 2
	Online Activity	Week 7 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
	Assessment	System Advisor Model Analysis (Task 1 Due Week 5; Task 2 Due Week 7; Task 3 Due Week 10): Submit 3 seperate Task Reports (in Moodle)
Week 8: 18 July - 22 July	Online Activity	3 Moodle Lessons: Flat Plate Solar Collector Optimisation; TRNSYS & Other Solar Modelling Software; Solar Hot Water Systems Part 1
	Online Activity	Week 8 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
Week 9: 25 July - 29 July	Online Activity	2 Moodle Lesson: Evacuated Tubes; Solar Hot Water Systems Part 2
	Online Activity	Week 9 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
	Assessment	Laboratory Report (Due Week 9): Students must also submit a peer review as part of the marking.
Week 10: 1 August - 5 August	Online Activity	2 Moodle Lessons: Large Scale Solar Thermal Development, Part 1 and Part 2

	Online Activity	Week 10 Lecture Video.
	Online Activity	Weekly Teams Discussion.
	Workshop	Problem solving workshop with demonstrator. Video recordings and/or live sessions with demonstrators (choice of virtual or in-person as per timetable enrolment).
	Assessment	Weekly Quiz: Quiz Closes before the next scheduled lecture time
	Assessment	System Advisor Model Analysis (Task 1 Due Week 5; Task 2 Due Week 7; Task 3 Due Week 10): Submit 3 seperate Task Reports (in Moodle)

Resources

Prescribed Resources

Restating the above, the following represents a list of the most useful resources for this course:

- MECH9720 Course Notes* (in Moodle)
- The course notes are needed to solve the demonstration session problems and roughly follow along with the course content.
- Online Lessons (in Moodle)
- Video recordings of lectures from previous years (in Moodle)
- Video recordings of problem solving demonstrations (in Moodle)
- Live in-person/online problem solving demonstrations (Teams or in-person)
- A Virtual 360 Lab tool
- Assignment details (templates, examples, rubrics) in Moodle
- Lecture notes/slides in Moodle
- Worked and numeric solutions to selected problems in Moodle
- An ongoing discussion in Teams (with Live access during scheduled lecture times)
- Links to solar resources and other supplementary information

Recommended Resources

Aside from the Course Notes, which are provided on Moodle, the following are suggested for further reading:

- Duffie J.A. & Beckman, W.A. Solar Engineering of Thermal Processes, Wiley 2013 [4th edition available from https://library.unsw.edu.au in the Wiley eBooks Collection]
- Cengal, Y.A. and Ghajar, A.J., Heat and Mass Transfer, McGraw Hill, 2011
- Academic Journals: Solar Energy, J. Solar Energy Engineering, Applied Energy, Energy Renewable Energy, Renewable and Sustainable Energy Reviews.

Course Evaluation and Development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include removal of the PG report (additional work for PG students), the addition online quizzes (in lieu of a test), resources and feedback (including the adaptive lecture lessons), new laboratory facilities (now as as virtual lab as well), and changes to the assessments to manage student workload (the Lab is now a group report), more worked problems have been made available, and additional feedback on progress throughout the course has been implemented.

Laboratory Workshop Information

During the course, we will have an opportunity for in-person students to conduct a physical lab activity on the rooftop (Level 6) of the Ainsworth building. For those that would like to attend in person, sign-up in the spreadsheet by Week 3.

Submission of Assessment Tasks

Assessment submission and marking criteria

Should the course have any non-electronic assessment submission, these should have a standard School cover sheet.

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 policy

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 example:

- Your course has an assessment task worth a total of 100 marks.
- You submit the assessment 2 days (or part thereof) late (i.e. from 24-48 hours after the deadline).
- The submission is graded and awarded a mark of 65/100.
- A late penalty of 10 marks is deducted from your awarded mark (2 days @ 5% of 100 marks).
- Your adjusted final score is 55/100.

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

1. Weekly online tests or laboratory work worth a small proportion of the subject mark, or
2. Online quizzes where answers are released to students on completion, or
3. Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date, or
4. Pass/Fail assessment tasks.

Examinations

You must be available for all quizzes, tests and examinations. For courses that have final examinations,

these are held during the University examination periods: February for Summer Term, May for T1, August for T2, and November/December for T3.

Please visit myUNSW for Provisional Examination timetable publish dates. For further information on exams, please see the Exams webpage.

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 now 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.

Special Consideration Outcomes

Assessments have default Special Consideration outcomes. The default outcome for the assessment will be advised when you apply for Special Consideration. Below is the list of possible outcomes:

Outcome	Explanation	Example
Time extension	Student provided more time to submit the assessment	e.g. 1 more week of time granted to submit a report
Supplementary assessment	Student provided an alternate assessment at a later date/time	e.g. a supplementary exam is scheduled during the supplementary exam period of the term
Substitute item	The mark for the missed assessment is substituted with the mark of another assessment	e.g. mark for Quiz 1 applied also applied as mark for Quiz 2, meaning if a student achieved a mark of 20/30 for Quiz 1 and was granted Special Consideration for Quiz 2, a mark of 20/30 would be applied for Quiz 2, etc
Exemption	All course marks are recalculated excluding this assessment and its weighting	e.g. The course has an assessment structure of: - Assignments 30%, - Lab report 30%, - Final Exam 40%. If the Lab report is missed and student is granted Special Consideration, then the assessment structure may be reweighted as follows: - Assignments 50% - Final Exam 50% as though the Lab report did not exist
Non-standard	Course Coordinator is contacted for the outcome when special consideration is granted as the outcome differs on a case-by-case basis	e.g. typical for group assessments where time extension supplementary assessment could be granted to the group member, time extension could be granted to the whole group, etc. Clarify with your Course Convenor for

Academic Honesty and Plagiarism

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.

If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

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) even suspension from the university. The Student Misconduct Procedures are available here:

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

Academic Information

Credit points

Course credit is calculated in 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

****T2-2022 UPDATE****
- -

Public distancing conditions must be followed for all face-to-face classes. To ensure this, only students enrolled in those classes will be allowed in the room. No over-enrolment is allowed in face-to-face classes. Students enrolled in online classes can swap their enrolment from online to on-campus classes by Sunday, Week 1. Please refer to your course's Microsoft Teams and Moodle sites for more information about class attendance for in-person and online class sections/activities.

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. **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.

In certain classroom and laboratory situations where physical distancing cannot be maintained or there is a high risk that it cannot be maintained, face masks will be considered **mandatory PPE** for students and staff.

For more information, please refer to the
FAQs: https://www.covid-19.unsw.edu.au/safe-return-campus-faqs

Guidelines

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

Note: This course outline sets out 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 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 (as updated in Moodle), the description in the Course Outline/Moodle applies.

Image Credit

Solar Thermal Collector Array

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	