UNSW Course Outline

AERO9660 Advanced Aerospace Propulsion - 2024

Published on the 12 Sep 2024

General Course Information

Course Code : AERO9660
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Mechanical and Manufacturing Engineering
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate, Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This is a continuation of AERO3660 Flight Performance and Propulsion looking at advanced aspects of propulsion. It further builds on MMAN2700 Thermodynamics.

We start by conduction, convection, and radiation modes of heat transfer as our more advanced propulsion systems will require cooling. In detail, we look into a more detailed heat exchanger analysis than what was done in MMAN2700 Thermodynamics and we consider the Meredith effect.

We take the basic analysis of the turbojet engine and extend it to analyse the two-spool turbofan gas turbine engine. We also analyse propelling nozzles suitable for commercial and military aircraft. We also have a detailed look at Ramjets and Scramjets.

The work on rocketry is new. You will be introduced to rocket engines and rocket nozzle performance. To aid in our understanding we consider high temperature gas analysis, van der Waals equation of state and other more advanced equations of state.We pay a lot of attention to liquid rocket combustion, the prediction of adiabatic flame temperature of high-temperature reacting systems, the effects of chemical equilibrium on the adiabatic flame temperature. We also consider the burning regimes of solid rocket boosters.

To complete the work on rocketry, we consider electrothermal thrusters, , nuclear rockets, ion thrusters and their optimization.

Today, electrification and partial electrification of aircraft is gaining in importance. We consider hybrid powertrains, batteries, proton exchange membrane (PEM) fuel cell system analysis, electric machines (motors), boost converters for aircraft. We also take into account energy harvesting, the Betz limit, the Peukert effect, Paschen's law.

To finish up, we consider exergy analysis, internal combustion engines, and turbulent jet ignition.

Course Aims

This course aims to enable you to:

- Come to terms with the three modes by which heat is transferred, namely, conduction, convection and to a lesser extent radiation. Much of the remainder course relies on this knowledge. You will be expected to be able to analyze the behavior of heat exchangers.
- You will be introduced to the basics of rocket engines. You will be expected to understand how rocket nozzles work under any external conditions.
- You will learn to predict the behavior of high temperature gases, develop an appreciation of advanced equations of state through an introduction to the van der Waals equation.
- You will learn a new approach to calculating the adiabatic flame temperature of high-temperature reacting systems and learn how this is affected by chemical equilibrium.
- You will learn to analyze the behavior of other types of rockets such as electrothermal thrusters solid rocket boosters, nuclear rockets, and later ion thrusters.

- Gain a deeper appreciation of gas turbine operation and to examine the effects of variations in mach number and altitude on the behavior of military gas turbine engines.
- Carry out analysis on propelling nozzles and analysis on Ramjet engines and possibly Scramjet engines.
- Come to terms with full electrification and partial electrification of aircraft. We will learn about electric motors, batteries, proton exchange membrane (PEM) fuel cells stacks, boost controllers.
- We will discuss hybrid powertrain topologies, energy harvesting, the Betz limit, the Peukert effect and Paschen's law.
- You will be introduced to exergy analysis.
- Develop a deeper understanding of the thermodynamic aspects of reciprocating piston internal combustion engines and see where reciprocating piston engine development is going.

Relationship to Other Courses

AERO9660 is a continuation of AERO3660.You should not do AERO9660 if you have not done AERO3660 or in the case of mechanical engineering students, the advanced thermodynamics subject MECH3610. You really need to be very good with compressible flows to do AERO9660. You have been warned !

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Calculate the heat transfer due to conduction, convection and radiation.
CLO2 : Analyze and predict the behavior of gas turbine, two-spool and turbofan engines in various flight scenarios, for both commercial and military purposes. Develop an understanding of ramjets and scramjets.
CLO3 : Develop an understanding of liquid chemical rockets, their nozzle performance and adiabatic flame temperature/chemical equilibrium analysis. You will also need to understand electrothermal thrusters, solid rocket boosters, nuclear rockets and ion thrusters.
CLO4 : Advanced analysis of the thermodynamic aspects of reciprocating engines.
CLO5 : Come to terms with the electrification of aircraft. Understand the operation of electric motors, batteries, fuel cells systems, boost controllers.

Course Learning Outcomes	Assessment Item
CLO1 : Calculate the heat transfer due to conduction, convection and radiation.	• Assignment 1 • Assignment 2 • Class Test • Final Exam
CLO2 : Analyze and predict the behavior of gas turbine, two-spool and turbofan engines in various flight scenarios, for both commercial and military purposes. Develop an understanding of ramjets and scramjets.	• Assignment 2 • Class Test • Final Exam
CLO3 : Develop an understanding of liquid chemical rockets, their nozzle performance and adiabatic flame temperature/chemical equilibrium analysis. You will also need to understand electrothermal thrusters, solid rocket boosters, nuclear rockets and ion thrusters.	• Assignment 2 • Class Test • Final Exam
CLO4 : Advanced analysis of the thermodynamic aspects of reciprocating engines.	• Assignment 2 • Final Exam
CLO5 : Come to terms with the electrification of aircraft. Understand the operation of electric motors, batteries, fuel cells systems, boost controllers.	• Assignment 2 • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Echo 360 | Microsoft Teams

Learning and Teaching in this course

Two lectures per week. Come in and attend because we would love to see you here.

Consultation periods on Wednesday 12:30pm until 1:00pm.

A consultant will be available on-line on Moodle 5 days a week (**not** on the weekends because this is unreasonable on our consultants). They will check Moodle once a day.

Other Professional Outcomes

None

Additional Course Information

None

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Assignment 1 Assessment Format: Individual	10%	Start Date: 09/09/2024 09:00 AM Due Date: 23/09/2024 09:00 AM Post Date: 23/09/2024 09:00 AM
Assignment 2 Assessment Format: Individual	20%	Start Date: 21/10/2024 09:00 AM Due Date: 04/11/2024 09:00 AM Post Date: 04/11/2024 09:00 AM
Class Test Assessment Format: Individual	20%	Start Date: 21/10/2024 09:00 AM Due Date: 21/10/2024 10:00 AM Post Date: 21/10/2024 10:00 AM
Final Exam Assessment Format: Individual	50%	Start Date: Not Applicable Due Date: Not Applicable

Assessment Details

Assignment 1

<u>Assessment Overview</u>

Assessment length: 10 -20 pages

Assessment criteria

Markers will be looking for logical solution and sensible answer.

Marks awarded for both solution and answer.

Individualized feedback given with mark.

Course Learning Outcomes

- CLO1 : Calculate the heat transfer due to conduction, convection and radiation.

Detailed Assessment Description

This assessment will be on solid rockets, not on heat transfer.

Assessment Length

10 pages

Submission notes

On Moodle

Assessment information

You need to produce a sensible solution. The answer can be typed or hand written. So long as the marker can read it and make sense of it it will be okay.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

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

None

Assignment 2

Assessment Overview

Assessment length: 20-30 pages

Assessment criteria

Markers will be looking for logical solution and sensible answer.

Marks awarded for both solution and answer.

Individual feedback given with mark.

Course Learning Outcomes

- CLO1 : Calculate the heat transfer due to conduction, convection and radiation.
- CLO2 : Analyze and predict the behavior of gas turbine, two-spool and turbofan engines in various flight scenarios, for both commercial and military purposes. Develop an understanding of ramjets and scramjets.
- CLO3 : Develop an understanding of liquid chemical rockets, their nozzle performance and adiabatic flame temperature/chemical equilibrium analysis. You will also need to understand electrothermal thrusters, solid rocket boosters, nuclear rockets and ion thrusters.
- CLO4 : Advanced analysis of the thermodynamic aspects of reciprocating engines.
- CLO5 : Come to terms with the electrification of aircraft. Understand the operation of electric motors, batteries, fuel cells systems, boost controllers.

Detailed Assessment Description

TBA

Assessment Length

20 pages

Submission notes

On Moodle

Assessment information

You need to produce a sensible solution. The answer can be typed or hand written. So long as the marker can read it and make sense of it it will be okay.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see here.

None

Class Test

Assessment Overview

Assessment length: 1 hour

A written in class test which could cover all material up to the end of week 5.

Individual feedback when marks are returned.

Course Learning Outcomes

- CLO1 : Calculate the heat transfer due to conduction, convection and radiation.
- CLO2 : Analyze and predict the behavior of gas turbine, two-spool and turbofan engines in various flight scenarios, for both commercial and military purposes. Develop an understanding of ramjets and scramjets.
- CLO3 : Develop an understanding of liquid chemical rockets, their nozzle performance and adiabatic flame temperature/chemical equilibrium analysis. You will also need to understand electrothermal thrusters, solid rocket boosters, nuclear rockets and ion thrusters.

Detailed Assessment Description

TBA

Assessment Length

1 hr

Submission notes

Hand In

Assessment information

You need to produce a sensible solution. The answer needs to be hand written. So long as the marker can read it and make sense of it it will be okay.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

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

None

Final Exam

Assessment Overview

Assessment length: 2 hrs

The final exam will take into account everything you have learned in this course.

Course Learning Outcomes

- CLO1 : Calculate the heat transfer due to conduction, convection and radiation.
- CLO2 : Analyze and predict the behavior of gas turbine, two-spool and turbofan engines in various flight scenarios, for both commercial and military purposes. Develop an understanding of ramjets and scramjets.
- CLO3 : Develop an understanding of liquid chemical rockets, their nozzle performance and adiabatic flame temperature/chemical equilibrium analysis. You will also need to understand electrothermal thrusters, solid rocket boosters, nuclear rockets and ion thrusters.
- CLO4 : Advanced analysis of the thermodynamic aspects of reciprocating engines.
- CLO5 : Come to terms with the electrification of aircraft. Understand the operation of electric motors, batteries, fuel cells systems, boost controllers.

Detailed Assessment Description

You will be potentially tested on all the course material.

Assessment Length

2 hrs

Submission notes

Invigilated Exam

Assessment information

You need to produce a sensible solution. Your answer needs to be hand written.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see here.

None

General Assessment Information

None

Grading Basis

Standard

Requirements to pass course

You need 50% to pass the course.

Course Schedule

Attendance Requirements

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

General Schedule Information

Week 1

Monday 9:00am-11:00am: Introduction to rocket engines and rocket nozzle performance.

Wednesday 11:00am-12:30pm: Analysis of solid rocket boosters.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 2

Monday 9:00am-11:00am: Liquid rocket combustion, Prediction of adiabatic flame temperature and chemical equilibrium.

Wednesday 11:00am-12:30pm: Conduction, and convection, modes of heat transfer.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 3

Monday 9:00am-11:00am: Introduction to heat exchangers and the ε-*NTU* method. The Meredith effect.

Wednesday 11:00am-12:30pm: Introduction to thermal radiation.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 4

Monday 9:00am-11:00am: Analysis of two-spool turbofan gas turbine engine. Military jet engines.

Wednesday 11:00am-12:30pm: Air intakes, nozzles, ramjets, and scramjets.The Rayleigh Curve.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 5

Monday 9:00am-11:00am: Public Holiday so no class.

Wednesday 11:00am-12:30pm: Electrification and hybridization of powertrains. Proton exchange membrane fuel cells.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 6

Monday 9:00am-11:00am: No Classes

Wednesday 11:00am-12:30pm: No classes

Wednesday 12:30pm-1:00pm: No consultation period.

Week 7

Monday 9:00am-11:00am: Class test (first hour), then high temperature gases, van der Waals equation.

Wednesday 11:00am-12:30pm: Permanent magnet synchronous electrical machines. Boost Controllers.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 8

Monday 9:00am-11:00am: Energy harvesting, the Betz limit, the Peukert Effect, Paschen’s Law.

Wednesday 11:00am-12:30pm: Advanced thermodynamic exergy analysis.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 9

Monday 9:00am-11:00am: Electrothermal thrusters. Ion thrusters for spacecraft.

Wednesday 11:00am-12:30pm: Ion thruster optimization. Nuclear Rockets.

Wednesday 12:30pm-1:00pm: Consultation period.

Week 10

Monday 9:00am-11:00am: Internal combustion engines advanced analysis.

Wednesday 11:00am-12:30pm: Internal combustion engines advanced technologies.

Wednesday 12:30pm-1:00pm: Consultation period.

Course Resources

Prescribed Resources

S.D. Heister, W.E. Anderson, T.L. Pourpoint, & R.J. Cassady, Rocket Propulsion, Cambridge University Press.

N. Cumpsty, & A. Heyes, 2015, Jet Propulsion. A simple guide to the aerodynamic and thermodynamic design and performance of jet engines, 3rd edition, Cambridge University Press. (An Old Favourite. Cumpsty's approach should be better known).

Recommended Resources

B. Gunston, 2006, The development of jet and turbine aero engines, 4th edition, Patrick Stephens Limited (an imprint of Haynes publishing).

B. Gunston, 1999, Development of piston aero engines, 2nd edition, Patrick Stephens Limited (an

imprint of Haynes publishing).

K. Hünecke, 1997, Jet engines. Fundamentals of theory, design and operation, Airlife Publishing Limited, Shrewsbury, England.

J. Kurzke & I. Halliwell, 2018, Propulsion and power, an exploration of gas turbine performance modelling, Springer.

Rolls Royce, 2005, The jet engine, Rolls Royce Technical Publications.

A. Schmidt, 2019, Technical thermodynamics for engineers, basics and applications, Springer.

A. Bejan, 2006, Advanced engineering thermodynamics, 3rd edition, John Wiley & Sons, Hoboken, New Jersey.

A. Bejan, 1993, Heat transfer, John Wiley & Sons, Hoboken, New Jersey.

M.F. Modest & S. Mazunder, 2022, Radiative heat transfer, 4th edition, Academic Press.

K.C. Rolle, 2016, Heat and mass transfer, 2nd edition, Cengage Learning, U.S.A..

J.P. Holman, 2010, Heat transfer, 10th edition, McGraw Hill.

A. Medina, P.L. Curto-Risso, A.C. Hernandez, L. Guzman-Vargas, F. Angulo-Brown & A.K. Sen, 2014, Quasi-dimensional simulation of spark ignition engines, Springer.

K. Hoag & B. Dondlinger, 2016. Vehicluar engine design, 2nd edition, Springer.

H. Hiereth & P. Prenninger, 2003, Charging the internal combustion engine, Springer.

G.P. Merker, C. Schwarz, G. Stiesch, & F. Otto, 2006, Simulating combustion, Simulation of combustion and pollutant formation for engine-development, Springer.

J.L. Lumley, 1999, Engines, an introduction, Cambridge University Press.

R. D. Archer & M. Saarlas, 1996, An introduction to aerospace propulsion, Prentice-Hall, Inc., Upper Saddle River, New Jersey, 07458.

G. P. Sutton & O. Biblarz, 2017, Rocket propulsion elements, 9th edition, Wiley.

M. J. L. Turner, 2009, Rocket and spacecraft propulsion, principles, practice and new developments, 3rd edition, Springer.

U. Walter, 2019, Astronautics, the physics of space flight, 3rd edition, Springer.

W. Emrich. Jr., 2016, Principles of nuclear rocket propulsion, Butterworth & Heinemann.

S.D. Heister, W.E. Anderson, T.L. Pourpoint & R.J. Cassady, 2019, Rocket propulsion, Cambridge University Press.

A. de Iaco Veris, 2021, Fundamental concepts of liquid propellant rocket engines, Springer

J. D. Clark, 2017, Ignition! An informal history of liquid rocket propellants, Rutgers University Press Classics.

T. S. Taylor, 2009, Introduction to rocket science and engineering, CRC Press, Boca Raton, FL 33487-2742.

P. Fortescue, G. Swinerd & J. Stark, 2011, Spacecraft systems engineering, 4th edition, Wiley.

A. Hughes & B. Drury, 2013, Electric motors and drives, Fundamentals, types and applications, 4th Edition, Newnes.

Q. Quan, 2017, Introduction to multicopter design and control, Springer.

L. Guzzella, & A. Sciarretta, 2013, Vehicle propulsion systems, Introduction to modeling and optimization, 3rd Edition, Springer.

W. W. Pulkrabek, 2004, Engineering fundamentals of the internal combustion engine, 2nd edition, Pearson Prentice Hall.

J.B. Heywood, 1988, Internal combustion engines fundamentals, McGraw Hill.

D. Crane, Powerplant, 2nd Edition, ASA AMT-P2.

J. A. Camberos & D. J. Moorhouse, 2011, Exergy analysis and design optimization for aerospace vehicles and systems, Editor-in-chief, F. K. Lu, Vol. 28, Progress in astronautics and aeronautics, AIAA, resto, Virginia.

J.E.A. John, 1969, Gas Dynamics, Allyn & Bacon.

J. D. Anderson Jr., 2012, Introduction to flight, McGraw Hill, New York, 10020NY.

R. Sterkenburg & P.H. Wang, 2022, Standard aircraft engines handbook, McGraw Hill, New York.

M. Volkenstein, 2009, Entropy and information, Birkhauser.

L. Johnson, 2022, A traveller's guide to the stars, Princeton University Press.

W.D. Woods, 2011, How Apollo flew to the Moon, Springer.

V. Babu, 2022, Fundamentals of propulsion, Springer.

G. Choubey, & M. Tiwari, 2022, Scramjet Combustion, Elsevier, Butterworth-Heinemann.

C. Balaji, 2021, Essentials of radiation heat transfer, Springer.

R. O'Hayre, S-W. Cha, W. Colella, & F.B. Prinz, 2016, Fuel cell fundamentals, 3rd edition, Wiley.

Additional Costs

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Course Evaluation and Development

This is the fifth time this course has run. As per usual, there have been some updates. This is because I continue to learn and because the field is constantly changing.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	John Olsen		311c	9385 5217	Friday morning from 9-10am in my office	No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

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

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

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

II. Administrative matters and links

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

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

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

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

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

Academic Honesty and Plagarism

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

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

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

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

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

Submission of Assessment Tasks

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

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

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

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

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

Faculty-specific Information

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

Engineering Industrial Training – Industrial training questions

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

UNSW Exchange – student exchange enquiries (for inbound students)

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

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

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

School-specific Information

Short Extensions

Short extensions are not currently applicable to Mechanical and Manufacturing Engineering Courses.

Review of Results

If you believe that there has been a marking error, you can request a review of results. Review of results cannot be used to get feedback.

If you would like feedback for assessments, you are welcome to contact the course convenor directly.

Use of AI

The use of AI is prohibited unless explicitly permitted by the course convenor. Please respect this and be aware that penalties will apply when unauthorised use is detected, such as through Turnitin. If the use of generative AI, such as ChatGPT, is allowed in a specific assessment, they must be properly credited, and your submissions must be substantially your own work.

Final Exam in Exam Period

For courses with a centrally timetabled final exam, students must be available for the entire exam period from Mon-Sat until your exact exam date is confirmed.

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