UNSW Course Outline

ELEC9711 Power Electronics for Renewable and Distributed Generation - 2024

Published on the 25 Aug 2024

General Course Information

Course Code : ELEC9711
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Electrical Engineering & Telecommunications
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Renewable energy from natural sources (e.g., sunlight, wind) is increasingly replacing fossil fuels for electricity generation, usually in the form of small-scale distributed generation sources. Power electronics plays a crucial role in the practical integration of such energy sources into the electricity supply networks. This course is intended for all of you who may want to work in industry or academic environments where power electronics converters are used. These consist of the design, application and maintenance of converters used for applications including power supplies, motor drives, distribution grid networks, renewable energy generation sources, high power transmission and many more.

Specifically, this course will cover:

- Multiple types of DC-DC converter
- Grid-connected inverters
- Three-phase inverters
- Wind turbines
- Photovoltaic electrical systems
- HVDC transmission systems
- Multi-level converters

The topics to be covered in this course will include: Grid integration of electrical power from renewable sources; Current and voltage control; Advanced topics in DC-DC converters, inverters, AC-DC converters and AC-AC converters for use in utility interfacing; resonant converters for DC-DC conversion; dynamic representation of DC-DC converters, control loops design; converter circuit and system modelling using LTSpice or other platforms, device selection and their modeling, thermal design, gate drive circuit design, magnetic core and other component selection and design, and case studies of converter system designs.

Course Aims

The aim of this course is to equip students with more in-depth knowledge of power converter circuits than is possible in an introductory course. Converters with non-ideal devices and components and their control characteristics (both steady-state and dynamic) as encountered in real converters are treated. Converters systems of much greater complexity and application requirements are covered. Modelling of converter circuits and systems on PSIM and Matlab/Simulink and other platforms are introduced, with a view to acquaint students with such design platforms.

Relationship to Other Courses

This is a postgraduate course in the School of Electrical Engineering and Telecommunications.

It is essential that you are familiar with the content of ELEC4614 Power Electronics including basic DC/DC isolated and non-isolated converters, the H-bridge converter and thyristor rectifier/ inverter circuits. A good grasp of DC, AC and transient circuit analysis will assist with the course.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain the use of power converters in wind turbines and photovoltaic applications
CLO2 : Explain the concept of maximum power point tracking
CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network
CLO4 : Explain the basic components of an HVDC system and the control of real power flow
CLO5 : Explain power converters with non-ideal devices and elements
CLO6 : Develop analytical techniques for analysing the steady-state and dynamic characteristics of converters
CLO7 : Explain the quadrant operation of various types of converters and their control requirements, selection of converters, components, etc
CLO8 : Explain how to design the hierarchical control structures for power converters and systems
CLO9 : Select and design important elements of a power converter system
CLO10 : Apply the theories of power electronic converters and control system design to implement power converter systems for specific applications

Course Learning Outcomes	Assessment Item
CLO1 : Explain the use of power converters in wind turbines and photovoltaic applications	• Assignment 1 • Assignment 3 • Final Examination
CLO2 : Explain the concept of maximum power point tracking	• Assignment 1 • Assignment 3 • Final Examination
CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network	• Assignment 2 • Assignment 1 • Assignment 3 • Final Examination
CLO4 : Explain the basic components of an HVDC system and the control of real power flow	• Assignment 2 • Assignment 3 • Final Examination
CLO5 : Explain power converters with non-ideal devices and elements	• Assignment 2 • Assignment 3 • Final Examination
CLO6 : Develop analytical techniques for analysing the steady-state and dynamic characteristics of converters	• Assignment 2 • Assignment 3 • Final Examination
CLO7 : Explain the quadrant operation of various types of converters and their control requirements, selection of converters, components, etc	• Assignment 2 • Assignment 3 • Final Examination
CLO8 : Explain how to design the hierarchical control structures for power converters and systems	• Assignment 3 • Final Examination
CLO9 : Select and design important elements of a power converter system	• Final Examination
CLO10 : Apply the theories of power electronic converters and control system design to implement power converter systems for specific applications	• Final Examination

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams | OpenLearning

Learning and Teaching in this course

To be confirmed.

Other Professional Outcomes

Relationship to Engineers Australia Stage 1 competencies:

The Course Learning Outcomes (CLOs) contribute to the Engineers Australia (National Accreditation Body) Stage I competencies as outlined below

Engineers Australia (EA), Professional Engineer Stage 1 Competencies

PE1: Knowledge and Skill Base:
PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals: CLO 1, 2
PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing: CLO 1, 2, 3, 4 ,5, 6
PE1.3 In-depth understanding of specialist bodies of knowledge: CLO 2, 3, 4
PE1.4 Discernment of knowledge development and research directions: CLO 4, 5, 6
PE1.5 Knowledge of engineering design practice: CLO 4
PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice: n/a

PE2: Engineering Application Ability:
PE2.1 Application of established engineering methods to complex problem solving: CLO 6, 7, 8
PE2.2 Fluent application of engineering techniques, tools and resources: CLO 7, 8, 9,10
PE2.3 Application of systematic engineering synthesis and design processes: CLO 8, 9, 10
PE2.4 Application of systematic approaches to the conduct and management of engineering projects: n/a

PE3: Professional and Personal Attributes:
PE3.1 Ethical conduct and professional accountability: n/a
PE3.2 Effective oral and written communication (professional and lay domains): CLO 1
PE3.3 Creative, innovative and pro-active demeanour: CLO 5
PE3.4 Professional use and management of information: CLO 3
PE3.5 Orderly management of self, and professional conduct: n/a
PE3.6 Effective team membership and team leadership: n/a

This course is also designed to provide the course learning outcomes which arise from targeted graduate capabilities. The targeted graduate capabilities broadly support the UNSW and Faculty of Engineering graduate capabilities (also listed below).

Targeted Graduate Capabilities

Electrical Engineering and Telecommunications programs are designed to address the following targeted capabilities which were developed by the school in conjunction with the requirements of professional and industry bodies:

- The ability to apply knowledge of basic science and fundamental technologies;
- The skills to communicate effectively, not only with engineers but also with the wider community;
- The capability to undertake challenging analysis and design problems and find optimal solutions;
- Expertise in decomposing a problem into its constituent parts, and in defining the scope of each part;
- A working knowledge of how to locate required information and use information resources to their maximum advantage;
- Proficiency in developing and implementing project plans, investigating alternative solutions, and critically evaluating differing strategies;
- An understanding of the social, cultural and global responsibilities of the professional engineer;
- The ability to work effectively as an individual or in a team;
- An understanding of professional and ethical responsibilities;
- The ability to engage in lifelong independent and reflective learning

UNSW Graduate Capabilities

The course delivery methods and course content directly or indirectly addresses a number of core UNSW graduate capabilities, as follows:

- Developing scholars who have a deep understanding of their discipline, through lectures and solution of analytical problems in tutorials and assessed by assignments and written examinations.
- Developing rigorous analysis, critique, and reflection, and ability to apply knowledge and skills to solving problems. These will be achieved by the laboratory experiments and interactive checkpoint assessments and lab exams during the labs.
- Developing capable independent and collaborative enquiry, through a series of tutorials spanning the duration of the course.
- Developing independent, self-directed professionals who are enterprising, innovative, creative and responsive to change, through challenging design and project tasks.
- Developing citizens who can apply their discipline in other contexts, are culturally aware and environmentally responsible, through interdisciplinary tasks, seminars and group activities

Additional Course Information

Delivery Mode

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Online lecture videos and screencasts which explain the important concepts for each topic of

the course;
- Formal lectures/tutorials, which provide you with alternative explanations to aid your understanding. They also allow for exercises in problem solving and allow for time for you to resolve problems in understanding of lecture material;
- Design and simulation work, which supports the lecture video material and also provides you with skills necessary to perform a design task.

Learning in this course

You are expected to attend all lecture/tutorial classes in order to maximise learning. You should watch the relevant online lecture videos before attending the lecture/tutorial classes. Reading additional texts will further enhance your learning experience. Group learning is also encouraged. UNSW assumes that self-directed study of this kind is undertaken in addition to attending formal classes throughout the course.

Tutorial classes

Five to six tutorial sheets may be expected. The problem-solving sessions will be on most recently covered topics. Additionally, online PSIM or LTSpice sessions may be arranged. Students will be expected to participate during these sessions, in the form of questions, suggested solutions and methods. Participation by students and the tutor should be viewed as desirable aspects of these sessions.

You should attempt all of your problem sheet questions in advance of attending any tutorial classes. The importance of adequate preparation prior to each tutorial cannot be overemphasized, as the effectiveness and usefulness of the tutorial depends to a large extent on this preparation. Group learning is encouraged. Answers for these questions will be discussed during the tutorial class and the tutor will cover the more complex questions in the tutorial class. In addition, during the tutorial class, 1-2 new questions that are not in your notes may be provided by the tutor, for you to try in class. These questions and solutions may not be made available on the web, so it is worthwhile for you to attend your tutorial classes to gain maximum benefit from this course.

Workload

It is expected that you will spend at least 15 hours per week studying a 6 UoC course, from Week 1 until the final assessment, including both formal classes and independent, self-directed study. In periods where you need to complete assignments or prepare for examinations, the workload may be greater. Over-commitment has been a common source of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Assignment 1 Assessment Format: Individual	10%	Start Date: 22/09/2023 03:00 PM Due Date: 04/10/2024 03:00 PM
Assignment 2 Assessment Format: Individual	10%	Start Date: 18/10/2024 03:00 PM Due Date: 27/10/2023 03:00 PM
Assignment 3 Assessment Format: Individual	20%	Start Date: 03/11/2023 03:00 PM Due Date: 22/11/2024 03:00 PM
Final Examination Assessment Format: Individual	60%	Start Date: Not Applicable Due Date: Not Applicable

Assessment Details

Assignment 1

Assessment Overview

This assignment, based around first 3 weeks of topics, is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the problem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that students can see and that will guide them on the necessary substance of each sub-problem in the assignment. Class-wide feedback will be verbally given during a lecture session.

Course Learning Outcomes

- CLO1 : Explain the use of power converters in wind turbines and photovoltaic applications
- CLO2 : Explain the concept of maximum power point tracking
- CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network

Detailed Assessment Description

Assignment 1 will assess your course learning outcomes of weeks 1-3 topics.

The assignment is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the prblem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that stundets can see and that will guide them on the necessary substance of each sub-problem in the assignemnt.

Assessment information

You are required to submit this hand-in assignment for ELEC9711. The mark from this assignment will contribute to 10% of your final class mark. You are expected to submit this hand-in assignment using a PDF file via the Assignment 1 link on the ELEC9711 Moodle page before 3pm on the Friday of week 4 T3. Late submissions will not be accepted. You must include a signed cover sheet declaring that the work submitted is your own work and this must be the first page of the assignment: the cover sheet is available on the OpenLearning site alongside this assignment

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.

Assignment 2

Assessment Overview

This assignment on the fourth-order circuit is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the problem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that students can see and that will guide them on the necessary substance of each sub-problem in the assignment. Class-wide feedback will be verbally given during a lecture session.

Course Learning Outcomes

- CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network
- CLO4 : Explain the basic components of an HVDC system and the control of real power flow
- CLO5 : Explain power converters with non-ideal devices and elements
- CLO6 : Develop analytical techniques for analysing the steady-state and dynamic characteristics of converters
- CLO7 : Explain the quadrant operation of various types of converters and their control

requirements, selection of converters, components, etc

Detailed Assessment Description

Assignment 2 topic: 4th Order Circuits

The assignment is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the prblem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that stundets can see and that will guide them on the necessary substance of each sub-problem in the assignemnt.

Submission notes

via Moodle

Assessment information

You are required to submit this hand-in assignment for ELEC9711. The mark from this assignment will contribute to 10% of your final class mark. You are expected to submit this hand-in assignment using a PDF file via the Assignment 2 link on the ELEC9711 Moodle page before 3pm on the Friday of week 6 T3. Late submissions will not be accepted. You must include a signed cover sheet declaring that the work submitted is your own work and this must be the first page of the assignment: the cover sheet is available on the OpenLearning site alongside this assignment.

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.
If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

Assignment 3

Assessment Overview

This assignment, based on selected topics covered in weeks 4-7, is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the problem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that students can see and that will guide them on the necessary substance of each sub-problem in the assignment. Class-wide feedback will be verbally given during a lecture session.

Course Learning Outcomes

- CLO1 : Explain the use of power converters in wind turbines and photovoltaic applications
- CLO2 : Explain the concept of maximum power point tracking
- CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network
- CLO4 : Explain the basic components of an HVDC system and the control of real power flow
- CLO5 : Explain power converters with non-ideal devices and elements
- CLO6 : Develop analytical techniques for analysing the steady-state and dynamic characteristics of converters
- CLO7 : Explain the quadrant operation of various types of converters and their control requirements, selection of converters, components, etc
- CLO8 : Explain how to design the hierarchical control structures for power converters and systems

Detailed Assessment Description

Assignment 3: Selected topics covered in weeks 4-7

The assignment is a question that is similar to an exam grade question. It will be marked as such and students are expected to consider the development of the theory and the solution to the prblem using theory, analysis and numerical solutions where necessary. The assignment has a marking scheme that stundets can see and that will guide them on the necessary substance of each sub-problem in the assignemnt.

Submission notes

via Moodle

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described

below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.
If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

Final Examination

<u>Assessment Overview</u>

The final examination is a two-hour written examination, comprising four questions from which students select to answer only three questions. Questions may be drawn from any aspect of the course (lectures and tutorials), unless specifically indicated otherwise by the lecturer. Marks will be assigned according to the correctness of the responses.

<u>Course Learning Outcomes</u>

- CLO1 : Explain the use of power converters in wind turbines and photovoltaic applications
- CLO2 : Explain the concept of maximum power point tracking
- CLO3 : Explain how real and reactive power flow can be controlled from a renewable or distributed energy resource to the utility network
- CLO4 : Explain the basic components of an HVDC system and the control of real power flow
- CLO5 : Explain power converters with non-ideal devices and elements
- CLO6 : Develop analytical techniques for analysing the steady-state and dynamic characteristics of converters
- CLO7 : Explain the quadrant operation of various types of converters and their control requirements, selection of converters, components, etc
- CLO8 : Explain how to design the hierarchical control structures for power converters and systems
- CLO9 : Select and design important elements of a power converter system
- CLO10 : Apply the theories of power electronic converters and control system design to implement power converter systems for specific applications

<u>Detailed Assessment Description</u>

Final examination is two-hour written examination, comprising four questions from which students select to answer only three questions.

<u>Generative AI Permission Level</u>

No Assistance

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

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

General Assessment Information

To be confirmed.

Grading Basis

Standard

Requirements to pass course

To be confirmed.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	Introduction and review
Week 2 : 16 September - 22 September	Lecture	Hard switched dc-dc converters
	Assessment	Assignment 1 released
Week 3 : 23 September - 29 September	Lecture	Resonant dc-dc converters
Week 4 : 30 September - 6 October	Lecture	Isolated dc-dc converters
	Assessment	Assignment 1 Due
Week 5 : 7 October - 13 October	Lecture	Grid-connected H-bridge converters
	Assessment	Assignment 2 Released
Week 6 : 14 October - 20 October	Lecture	Three phase inverter control
Week 7 : 21 October - 27 October	Lecture	Wind energy converters
	Assessment	Assignment 2 Due
Week 8 : 28 October - 3 November	Lecture	Photovoltaic inverters and control
	Assessment	Assignment 3 Released
Week 9 : 4 November - 10 November	Lecture	HVDC Transmission Systems
Week 10 : 11 November - 17 November	Lecture	Multi-Level Converters
	Assessment	Assignment 3 Due

Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

Course Resources

Prescribed Resources

To be confirmed.

Recommended Resources

COURSE RESOURCES

Textbooks

Reference textbooks

1. N. Mohan, T. M. Undeland & W. P. Robins, “Power Electronics; Converters, Applications and Design”, John Wiley, Second Edition, 1995, New York.

2. J. G. Kassakian, M.F. Schlecht & G.C. Verghese, “Principles of Power Electronics”, Addison Wesley, 1991.

3. R. W. Erickson, "Fundamentals of Power Electronics”, Kluwer Academic Publications, 1997.

4. D. W. Hart, “Introduction to Power Electronics”, Prentice Hall International, 1997.

On-line resources

Lecture Content

Lecture videos and lecture notes written by the lecturer for each section will be available from the course webpage on Open Learning. These are based on the textbooks listed above and other reference material which will be cited within the lecture videos/notes.

All lecture videos, notes, assignments, tutorial and technical report topics for this course can be downloaded from the Open Learning website. Students will be expected to have watched the relevant lecture videos before class and have access to, or to bring printed, tutorial sheets to the tutorials.

Open Learning

As a part of the teaching component, Open Learning will be used to disseminate teaching materials, host forums and occasionally, quizzes. Assessment marks will also be made available via Open Learning: https://www.openlearning.com/unswcourses/courses/elec9711-2021.

Mailing list

Announcements concerning course information will be given in the lectures and/or on Open Learning and/or via email (which will be sent to your student email address).

Additional Costs

To be confirmed.

Course Evaluation and Development

This course is under constant revision in order to improve the learning outcomes for all students. Please forward any feedback (positive or negative) on the course to the course convener or via the Course and Teaching Evaluation and Improvement Process. You can also provide feedback to ELSOC who will raise your concerns at student focus group meetings. As a result of previous feedback obtained for this course and in our efforts to provide a rich and meaningful learning experience, we have continued to evaluate and modify our delivery and assessment methods. This includes changing the content of the class to include more renewables and distributed generation and revising the assessment scheme. For the course delivered in 2017, the assessment schedule and weighting were adjusted such that the final exam represents 60% of the final mark, with assignments and coursework representing 40% in total. In 2019, the course underwent digital uplift and received a huge investment in the production of online materials, key concept videos and podcasts. These were used in 2020 for the first time.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	John Fletcher		Building G17, Room 404	0293856007	Yes To be confirmed.	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

General Conduct and Behaviour

Consideration and respect for the needs of your fellow students and teaching staff is an expectation. Conduct which unduly disrupts or interferes with a class is not acceptable and students may be asked to leave the class.

Use of AI for assessments

Your work must be your own. If you use AI in the writing of your assessment, you must acknowledge this and your submission must be substantially your own work. More information can be found on this website.

Workplace Health & Safety (WHS)

WHS for students and staff is of utmost priority. Most courses involve laboratory work. You must follow the rules about conduct in the laboratory. About COVID-19, advice can be found on this website.

School Contact Information

Consultations: Lecturer consultation times will be advised during the first lecture. You are welcome to email the tutor or laboratory demonstrator, who can answer your questions on this course and can also provide you with consultation times. ALL email enquiries should be made from your student email address with ELEC/TELExxxx in the subject line; otherwise they will not be answered.

Keeping Informed: Announcements may be made during classes, via email (to your student email address) and/or via online learning and teaching platforms – in this course, we will use Moodle https://moodle.telt.unsw.edu.au/login/index.php. Please note that you will be deemed to have received this information, so you should take careful note of all announcements.

Student Support Enquiries

For enrolment and progression enquiries please contact Student Services

Web

[Electrical Engineering Homepage]