



## UNSW Course Outline

# ZEIT1208 Introduction to Electrical Engineering - 2024

Published on the 14 Feb 2024

## General Course Information

Course Code : ZEIT1208

Year : 2024

Term : Semester 1

Teaching Period : Z1

Is a multi-term course? : No

Faculty : UNSW Canberra

Academic Unit : School of Engineering and Technology

Delivery Mode : In Person

Delivery Format : Standard

Delivery Location : UNSW Canberra at ADFA

Campus : UNSW Canberra

Study Level : Undergraduate

Units of Credit : 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

The focus of the course is on introducing students to fundamental concepts in electrical engineering and to the profession of electrical engineering. The course will also develop students' learning skills, and confidence and competence in assembling and measuring

electrical circuits on a breadboard. The course will cover circuit variables (voltage, current, power, energy), circuit elements (sources, Ohm's law, Kirchhoff's laws), and simple resistive circuits (series and parallel resistors, voltage and current divider), as well as an introduction to microcontrollers, digital inputs and outputs, and analog sensors. Students will be introduced to software used by professional engineers. The course will introduce aspects of the past, present, and future of the electrical engineering profession, and the ethical obligations of a practising electrical engineer.

# Course Learning Outcomes

Course Learning Outcomes	Engineers Australia - Professional Engineer (Stage 1)
CLO1 : Apply Ohm's & Kirchhoff's Laws to analyse and design DC circuits and circuits containing ideal operational amplifiers.	<ul style="list-style-type: none"> <li>• PEE1.1 : Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline</li> <li>• PEE1.2 : Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline</li> </ul>
CLO2 : Demonstrate competency in the use of common Electrical Engineering laboratory equipment and design and simulation tools.	<ul style="list-style-type: none"> <li>• PEE1.2 : Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline</li> <li>• PEE2.2 : Fluent application of engineering techniques, tools and resources</li> </ul>
CLO3 : Use appropriate engineering writing to communicate lab and theoretical results, including using software to create figures and graphs.	<ul style="list-style-type: none"> <li>• PEE3.2 : Effective oral and written communication in professional and lay domains</li> </ul>
CLO4 : Begin to reflect on your performance as an engineer, including providing feedback to yourself and others.	<ul style="list-style-type: none"> <li>• PEE3.2 : Effective oral and written communication in professional and lay domains</li> <li>• PEE3.5 : Orderly management of self, and professional conduct</li> </ul>

Course Learning Outcomes	Assessment Item
CLO1 : Apply Ohm's & Kirchhoff's Laws to analyse and design DC circuits and circuits containing ideal operational amplifiers.	
CLO2 : Demonstrate competency in the use of common Electrical Engineering laboratory equipment and design and simulation tools.	
CLO3 : Use appropriate engineering writing to communicate lab and theoretical results, including using software to create figures and graphs.	
CLO4 : Begin to reflect on your performance as an engineer, including providing feedback to yourself and others.	

## Learning and Teaching Technologies

Moodle - Learning Management System

# Learning and Teaching in this course

This course consists of lectures, tutorials, and laboratory exercises. Lectures will consist of instructor-led sessions, interspersed with learner centred activities (such as brief quizzes and discussions). The tutorials will allow you to practise questions based on the the analyses and concepts presented in the lectures. Tutorials are small group, and provide opportunities to work on and ask questions and for us to go through examples. Quizzes allow your knowledge from the lectures and tutorials to be formally examined. The laboratory competencies and submissions examine your technical abilites and understanding of the content: to succeed in this you will need to apply the theory taught in lectures and tutorials and to have practised the skills you will learn in the labs. Assessment and feedback is spread throughout the session to allow you plenty of time to practise skills and techniques that you might be unsure of. This course consists of lectures, tutorials, and laboratory exercises. Lectures will consist of instructor-led sessions, interspersed with learner centred activities (such as brief quizzes and discussions). The tutorials will allow you to

practise questions based on the the analyses and concepts presented in the lectures. Tutorials are small group, and provide opportunities to work on and ask questions and for us to go through examples. Quizzes allow your knowledge from the lectures and tutorials to be formally examined. The laboratory competencies and submissions examine your technical abilites and understanding of the content: to succeed in this you will need to apply the theory taught in lectures and tutorials and to have practised the skills you will learn in the labs. Assessment and feedback is spread throughout the session to allow you plenty of time to practise skills and techniques that you might be unsure of.

## The Learning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the [Moodle Support](#) page.

UNSW Moodle supports the following web browsers:

» Google Chrome 50+

» Safari 10+

\*\* Internet Explorer is not recommended

\*\* Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:

Windows 7, 10, Mac OSX Sierra, iPad IOS10

For further details about system requirements click [here](#).

Log in to Moodle [here](#).

If you need further assistance with Moodle:

For enrolment and login issues please contact:

IT Service Centre

Email: [itservicecentre@unsw.edu.au](mailto:itservicecentre@unsw.edu.au)

Phone: (02) 9385-1333

International: +61 2 9385 1333

For all other Moodle issues please contact:

External TELT Support

Email: [externalteltsupport@unsw.edu.au](mailto:externalteltsupport@unsw.edu.au)

Phone: (02) 9385-3331

International: +61 2 938 53331

Opening hours:

Monday – Friday 7:30am – 9:30 pm

Saturday & Sunday 8:30 am – 4:30pm

## Additional Course Information

### Referencing

In this course, students are required to reference following the APA 7 / Chicago NB referencing style. Information about referencing styles is available at: <https://guides.lib.unsw.adfa.edu.au/c.php?g=472948&p=3246720>

### Study at UNSW Canberra

<https://www.unsw.adfa.edu.au/study>

Study at UNSW Canberra has lots of useful information regarding:

- Where to get help
- Administrative matters
- Getting your passwords set up
- How to log on to Moodle
- Accessing the Library and other areas.

**Additional Information as required**

CRICOS Provider no. 00098G

The University of New South Wales Canberra.

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates	Engineers Australia - Professional Engineer (Stage 1)
Lab Assessment Format: Group	30%		<ul style="list-style-type: none"> <li>• PEE2.1 : Application of established engineering methods to complex engineering problem solving</li> <li>• PEE2.2 : Fluent application of engineering techniques, tools and resources</li> <li>• PEE2.4 : Application of systematic approaches to the conduct and management of projects within the technology domain</li> <li>• PEE3.2 : Effective oral and written communication in professional and lay domains</li> <li>• PEE3.4 : Professional use and management of information</li> </ul>
Tutorials Assessment Format: Group	20%	Due Date: weekly	<ul style="list-style-type: none"> <li>• PEE1.1 : Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline</li> <li>• PEE1.3 : In-depth understanding of specialist bodies of knowledge within the engineering discipline</li> </ul>
Quizzes Assessment Format: Individual	20%	Due Date: Week 4: 18 March - 22 March, Week 8: 29 April - 03 May	<ul style="list-style-type: none"> <li>• PEE1.1 : Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline</li> <li>• PEE1.3 : In-depth understanding of specialist bodies of knowledge within the engineering discipline</li> <li>• PEE2.1 : Application of established engineering methods to complex engineering problem solving</li> </ul>
Exam Assessment	30%		<ul style="list-style-type: none"> <li>• PEE1.3 : In-depth understanding of specialist</li> </ul>

Format: Individual			bodies of knowledge within the engineering discipline <ul style="list-style-type: none"> <li>• PEE1.2 : Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline</li> <li>• PEE2.1 : Application of established engineering methods to complex engineering problem solving</li> </ul>
--------------------	--	--	---

## Assessment Details

### Lab

#### Assessment Overview

One lab worth 10%, another worth 20%

#### Detailed Assessment Description

This component consists of weekly submissions (10% total) and a set of lab competencies (20%). You may work in groups for the weekly submissions, but you need to submit your own version of the work.

Mapping to course learning outcomes: L01, L02, L03, L04

## Tutorials

#### Assessment Overview

n/a

#### Detailed Assessment Description

Tutorials will be submitted weekly and will be assessed based on a satisfactory/unsatisfactory scale. In order to receive marks, you will need to provide feedback on other students' work. You may work in small groups, but you will need to submit your own solutions to the problems.

Mapping to course learning outcomes: L01, L03, L04



## Quizzes

### Assessment Overview

n/a

### Detailed Assessment Description

There are two quizzes (10% each) during the semester. Quizzes will be based on tutorial problems. Quiz 1 will be held in week 4, written feedback and grades will be given to students during week 5. Quiz 2 will be held in week 8.

Mapping to course learning outcomes: LO1, LO3, LO4

## Exam

### Assessment Overview

n/a

### Detailed Assessment Description

There will be a 30% final exam held during exam week.

Mapping to course learning outcomes: LO1, LO2, LO3, LO4

## General Assessment Information

Quiz 1 will be held in week 4, written feedback and grades will be given to students during week 5. If you will be late in submitting a piece of work, please reach out to Kate or Toby as soon as you can.

### Late Submission of Assessment

*Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty of 5% of the total available mark for the assessment will apply for each day that an assessment item is late up to a maximum of 5 days (120 hours) after which an assessment can no longer be submitted and a grade of 0 will be applied.*

### Use of Generative AI

Generative AI may be a useful tool for generating figures and written work in this class. Any use of generative AI must be acknowledged. Work without acknowledgement may be left ungraded. You can use generative AI software in this assessment to the extent specified in the

assessment instructions. Any output of generative software within your assessment must be attributed with full referencing.

If the outputs of generative AI such as ChatGPT form part of your submission and is not appropriately attributed, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

\* To cite: OpenAI (Year Accessed). ChatGPT. OpenAI. <https://openai.com/models/chatgpt/>

\* Please note that the outputs from these tools are not always accurate, appropriate, nor properly referenced. You should ensure that you have moderated and critically evaluated the outputs from generative AI tools such as ChatGPT before submission.

### Grading Basis

Standard

### Requirements to pass course

The overall passing mark is set at 50%.

## Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 26 February - 1 March	Lecture	Intro to the course and to the degree. Engineering ethics.
Week 2 : 4 March - 8 March	Lecture	Engineering ethics
Week 3 : 11 March - 15 March	Lecture	Voltage and energy, Current, Ohm's Law, Resistance and resistivity. Moday Lost, no changes.
Week 4 : 18 March - 22 March	Assessment	Revision, Quiz One on Friday
	Assessment	Quiz One on Friday 22nd.
Week 5 : 25 March - 29 March	Lecture	Internal Resistance, Power, Junction Law. Friday Lost. No labs on Tuesday or Friday
Week 6 : 1 April - 5 April	Lecture	Multiloop Circuits. Monday lost.
Week 7 : 22 April - 26 April	Lecture	Ideal Circuit elements. Wednesday Lost. Thursday Lost.
Week 8 : 29 April - 3 May	Lecture	Ideal Circuit Elements
	Assessment	Quiz Two on Friday 3rd
Week 9 : 6 May - 10 May	Lecture	Practical Sources. Friday Lost. No labs on Tuesday or Friday.
Week 10 : 13 May - 17 May	Lecture	Dependent Sources
Week 11 : 20 May - 24 May	Lecture	Applications
Week 12 : 27 May - 31 May	Lecture	Applications. Monday Timetable on Tuesday. Tuesday Lost. No labs on Tuesday or Friday.
Week 13 : 3 June - 7 June	Lecture	Complex Numbers

## Attendance Requirements

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

## General Schedule Information

KW and TKB will be present in all lectures and tutorials. TKB will be present in all labs.

## Course Resources

### Prescribed Resources

Nilsson and Riedel "Electric Circuits" Pearson, 11th ed

### Additional Costs

Multimeter (we will discuss).

## Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of this course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the "On-going Student Feedback" link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups. Student opinions really do make a difference. Refer to the Moodle site for this course to see how the feedback from previous students has contributed to the course development.

**Important note:** Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct Policy

<https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf>

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Toby Boyson		B15 R201	+61 2 5114 5126	Come by any time, but make an appointment by email if you have a longer question	Yes	Yes
Lecturer	Kate Wilson		B15 R202	02 5114 5222	Come by any time, but make an appointment by email if you have a longer question	No	No

# Other Useful Information

## Academic Information

### Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of each course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the “On-going Student Feedback” link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups (where applicable). Student opinions really do make a difference. Refer to the Moodle site for your course to see how the feedback from previous students has contributed to the course development.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct.

<https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf>

### Equitable Learning Services (ELS)

Students living with neurodivergent, physical and/or mental health conditions or caring for someone with these conditions may be eligible for support through the Equitable Learning Services team. Equitable Learning Services is a free and confidential service that provides practical support to ensure your mental or physical health conditions do not adversely affect your studies.

Our team of dedicated **Equitable Learning Facilitators (ELFs)** are here to assist you through this process. We offer a number of services to make your education at UNSW easier and more equitable.

Further information about ELS for currently enrolled students can be found at: <https://www.student.unsw.edu.au/equitable-learning>

## Academic Honesty and Plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. All students are expected to adhere to UNSW's Student Code of Conduct.

Find relevant information at: [Student Code of Conduct \(unsw.edu.au\)](https://student.unsw.edu.au)

Plagiarism undermines academic integrity and is not tolerated at UNSW. It is defined as using the words or ideas of others and passing them off as your own, and can take many forms, from deliberate cheating to accidental copying from a source without acknowledgement.

For more information, please refer to the following:

<https://student.unsw.edu.au/plagiarism>

## Submission of Assessment Tasks

### Special Consideration

Special Consideration is the process for assessing and addressing the impact on students of short-term events, that are beyond the control of the student, and that affect performance in a specific assessment task or tasks.

Applications for Special Consideration will be accepted in the following circumstances only:

- Where academic work has been hampered to a substantial degree by illness or other cause;
- The circumstances are unexpected and beyond the student's control;
- The circumstances could not have reasonably been anticipated, avoided or guarded against by the student; and either:
  - (i) they occurred during a critical study period and was 3 consecutive days or more duration, or a total of 5 days within the critical study period; or
  - (ii) they prevented the ability to complete, attend or submit an assessment task for a specific date (e.g. final exam, in class test/quiz, in class presentation)

Applications for Special Consideration must be made as soon as practicable after the problem occurs and at the latest within three working days of the assessment or the period covered by the supporting documentation.

By sitting or submitting the assessment task the student is declaring that they are fit to do so and cannot later apply for Special Consideration (UNSW 'fit to sit or submit' requirement).

Sitting, accessing or submitting an assessment task on the scheduled assessment date, after applying for special consideration, renders the special consideration application void.

Find more information about special consideration at: <https://www.student.unsw.edu.au/special/consideration/guide>

Or apply for special consideration through your [MyUNSW portal](#).

### **Late Submission of assessment tasks (other than examinations)**

UNSW has a standard late submission penalty of:

- 5% per day,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

### **Electronic submission of assessment**

Except where the nature of an assessment task precludes its electronic submission, all assessments must be submitted to an electronic repository, approved by UNSW or the Faculty, for archiving and subsequent marking and analysis.

### **Release of final mark**

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.