



# ELEC8276

## Electronic Systems Design

Session 2, In person-scheduled-weekday, North Ryde 2024

*School of Engineering*

### Contents

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<a href="#"><u>General Information</u></a>	2
<a href="#"><u>Learning Outcomes</u></a>	2
<a href="#"><u>General Assessment Information</u></a>	3
<a href="#"><u>Assessment Tasks</u></a>	4
<a href="#"><u>Delivery and Resources</u></a>	6
<a href="#"><u>Unit Schedule</u></a>	7
<a href="#"><u>Policies and Procedures</u></a>	7

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Simon Gross

[simon.gross@mq.edu.au](mailto:simon.gross@mq.edu.au)

Credit points

10

Prerequisites

Admission to MEngElecEng and 30cp at 3000-level or above

Corequisites

Co-badged status

Unit description

This unit aims to provide students with hands on experience in going from user specification to a fully functional prototype implementation of an electronic system. The unit will draw upon previous learning and cover topics related to design for manufacture and assembly, system integration, and the use of industry standard Electronic Design Automation (EDA) tools to solve a given engineering problem while meeting cost, performance and power requirements.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** critically appraise, design to a specification and prototype electronic systems considering practical manufacturing issues as well as performance, cost, and reliability constraints

**ULO2:** competently draw upon topics learned in other units to propose, design and demonstrate working solutions to given engineering problems.

**ULO3:** work within the constraints imposed by the availability of components, using software tools to produce designs that meet user requirements.

**ULO4:** demonstrate an understanding of the working principles of interaction between various electronic components in an electronic system, integrate and test various electronic subsystems

**ULO5:** prepare design documents and reports and communicate and explain design decisions

## General Assessment Information

In order to pass this unit a student must obtain a mark of 50 or more for the unit (i.e. obtain a passing grade P/ CR/ D/ HD).

For further details about grading, please refer below in the policies and procedures section.

### Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7<sup>th</sup> day (including weekends). After the 7<sup>th</sup> day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for [Special Consideration](#).

### Assessments where Late Submissions will be accepted

- Project 1, 2 & 3 – YES, Standard Late Penalty applies

### Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through [ask.mq.edu.au](http://ask.mq.edu.au).

If you receive [special consideration](#) for the final exam, a supplementary exam will be scheduled by the faculty during a supplementary exam period, typically about 3 to 4 weeks after the normal exam period. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Project 1</a>	20%	No	Week 5
<a href="#">Project 2</a>	20%	No	Week 9
<a href="#">Project 3</a>	20%	No	Week 13
<a href="#">Final written exam</a>	40%	No	Exam Period

### Project 1

Assessment Type **1**: Report

Indicative Time on Task **2**: 15 hours

Due: **Week 5**

Weighting: **20%**

Report based on project

On successful completion you will be able to:

- critically appraise, design to a specification and prototype electronic systems considering practical manufacturing issues as well as performance, cost, and reliability constraints
- competently draw upon topics learned in other units to propose, design and demonstrate working solutions to given engineering problems.
- work within the constraints imposed by the availability of components, using software tools to produce designs that meet user requirements.
- demonstrate an understanding of the working principles of interaction between various electronic components in an electronic system, integrate and test various electronic subsystems
- prepare design documents and reports and communicate and explain design decisions

### Project 2

Assessment Type **1**: Report

Indicative Time on Task **2**: 15 hours

Due: **Week 9**

Weighting: **20%**

Report based on project

On successful completion you will be able to:

- critically appraise, design to a specification and prototype electronic systems considering practical manufacturing issues as well as performance, cost, and reliability constraints
- competently draw upon topics learned in other units to propose, design and demonstrate working solutions to given engineering problems.
- work within the constraints imposed by the availability of components, using software tools to produce designs that meet user requirements.
- demonstrate an understanding of the working principles of interaction between various electronic components in an electronic system, integrate and test various electronic subsystems
- prepare design documents and reports and communicate and explain design decisions

## Project 3

Assessment Type <sup>1</sup>: Report

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **Week 13**

Weighting: **20%**

Report based on project

On successful completion you will be able to:

- critically appraise, design to a specification and prototype electronic systems considering practical manufacturing issues as well as performance, cost, and reliability constraints
- competently draw upon topics learned in other units to propose, design and demonstrate working solutions to given engineering problems.
- work within the constraints imposed by the availability of components, using software tools to produce designs that meet user requirements.
- demonstrate an understanding of the working principles of interaction between various electronic components in an electronic system, integrate and test various electronic subsystems
- prepare design documents and reports and communicate and explain design decisions

## Final written exam

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 40 hours

Due: **Exam Period**

Weighting: **40%**

Final written exam during the exam period

On successful completion you will be able to:

- critically appraise, design to a specification and prototype electronic systems considering practical manufacturing issues as well as performance, cost, and reliability constraints
- competently draw upon topics learned in other units to propose, design and demonstrate working solutions to given engineering problems.
- work within the constraints imposed by the availability of components, using software tools to produce designs that meet user requirements.
- demonstrate an understanding of the working principles of interaction between various electronic components in an electronic system, integrate and test various electronic subsystems
- prepare design documents and reports and communicate and explain design decisions

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<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

The unit is face-to-face and will commence in week 1. The 5 hours slot will be nominally split between 2h of delivering content from the resources below and 3h of hands-on circuit board design and working on project 1, 2 & 3.

The unit will use the following books as resources:

- Fundamentals of Electronic Systems Design, Jens Lienig, Hans Bruemmer, <https://doi.org/10.1007/978-3-319-55840-0>

- Fundamentals of Layout Design for Electronic Circuits, Jens Lienig, Juergen Scheible, <https://doi.org/10.1007/978-3-030-39284-0>

THESE BOOKS ARE FREELY AVAILABLE FOR DOWNLOAD FROM THE LIBRARY. PLEASE DO NOT PURCHASE THEM.

- <https://link.springer.com/content/pdf/10.1007/978-3-319-55840-0.pdf>
- <https://link.springer.com/content/pdf/10.1007/978-3-030-39284-0.pdf>

## Methods of Communication

We will communicate with you via your university email or through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to [ELEC8276@mq.edu.au](mailto:ELEC8276@mq.edu.au) from your **university email** address.

## COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: <https://www.mq.edu.au/about/coronavirus-faqs>. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

## Unit Schedule

The unit will commence in week 1.

Please refer to the unit's iLearn page for most up-to-date details.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/su\)](https://students.mq.edu.au/su)

[pport/study/policies](#)). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central](#) (<https://policies.mq.edu.au>) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)



## Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

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Unit information based on version 2024.01R of the [Handbook](#)