



ELEC8276

Electronic Systems Design

Session 2, In person-scheduled-weekday, North Ryde 2023

School of Engineering

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	4
<u>Delivery and Resources</u>	6
<u>Unit Schedule</u>	7
<u>Policies and Procedures</u>	7
<u>Changes from Previous Offering</u>	9
<u>Engineers Australia Competency Mapping</u>	9

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

Simon Gross

simon.gross@mq.edu.au

Contact via iLearn or E-mail

16 University Avenue, Room 04.518

During term, Mondays after the lecture.

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 7th day (including weekends). After the 7th 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.

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
Project 1	20%	No	Week 5
Project 3	20%	No	Week 13
Final written exam	40%	No	Exam Period
Project 2	20%	No	Week 9

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 3

Assessment Type ¹: Report

Indicative Time on Task ²: 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 ¹: Examination

Indicative Time on Task ²: 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

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

¹ 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.

² 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

Both, lecture and practicals will commence in week 1.

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 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

Both, lecture and practicals 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)

[upport/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 or if you are a Global MBA student contact 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/.

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.

Changes from Previous Offering

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

Student feedback from the previous offering of this unit was very positive overall, with students pleased with the clarity around assessment requirements and the level of support from teaching staff. As such, no change to the delivery of the unit is planned, however we will continue to strive to improve the level of support and the level of student engagement.

Engineers Australia Competency Mapping

EA Competency Standard		Unit Learning Outcomes
Knowledge and Skill Base	1.1 Comprehensive, theory-based understanding of the underpinning fundamentals applicable to the engineering discipline.	ULO2, ULO4
	1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing.	
	1.3 In-depth understanding of specialist bodies of knowledge	ULO1

	1.4 Discernment of knowledge development and research directions	
	1.5 Knowledge of engineering design practice	ULO1
	1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.	ULO2, ULO3
Engineering Application Ability	2.1 Application of established engineering methods to complex problem solving	ULO1, ULO4
	2.2 Fluent application of engineering techniques, tools and resources.	ULO3
	2.3 Application of systematic engineering synthesis and design processes.	ULO1
	2.4 Application of systematic approaches to the conduct and management of engineering projects.	ULO2
Professional and Personal Attributes	3.1 Ethical conduct and professional accountability.	ULO5
	3.2 Effective oral and written communication in professional and lay domains.	ULO5
	3.3 Creative, innovative and pro-active demeanour.	ULO1
	3.4 Professional use and management of information.	
	3.5 Orderly management of self, and professional conduct.	
	3.6 Effective team membership and team leadership	