



# ELEC8250

## System on Chip Design

Session 2, Special circumstance 2020

*School of Engineering*

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### Disclaimer

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### Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group learning activities on campus for the second half-year, while keeping an online version available for those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face and online activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

## General Information

Unit convenor and teaching staff

Unit Coordinator

Alan Kan

[alan.kan@mq.edu.au](mailto:alan.kan@mq.edu.au)

Contact via email

Level 1, 50 WLR

email for appointment

Credit points

10

Prerequisites

(ELEC3043 or ELEC343 or ELEC643) or ( ELEC3042 or ELEC342)

Corequisites

Co-badged status

Unit description

This unit aims to provide an understanding of the concepts, architectures, design tools and methods for developing System-on-Chip (SoC) solutions. The unit culminates in a project where students develop a SoC solution from high-level functional specifications through to design, implementation and testing on real hardware using industry standard hardware description and software programming languages and tools.

## 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:** Demonstrate understanding of what a System-on-Chip system is, and its constituent components.

**ULO2:** Demonstrate understanding of issues in hardware/software interface design.

**ULO3:** Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.

**ULO4:** Design and test System-on-Chip solutions on using standard hardware description and software programming languages.

**ULO5:** Prepare design documents and reports and communicate and explain design decisions.

## General Assessment Information

There are two assignments and one design project for this course. Assessment of assignments and project will be through a written report and oral presentation. They will be due according to the schedule above. Late submissions will attract a penalty of 20% of marks per day. Extenuating circumstances will be considered upon lodgment of an application for special consideration. Resubmissions of work are not allowed.

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 to the policies and procedures section.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Assignment 1 Report (1000 word equivalent)</u>	10%	No	Week 4
<u>Assignment 1 Defence</u>	15%	No	Week 4
<u>Assignment 2 Report (1000 word equivalent)</u>	10%	No	Week 7
<u>Assignment 2 Defence</u>	15%	No	Week 7
<u>Project Report (2000-word equivalent)</u>	20%	No	Week 13
<u>Project Defence and Demonstration</u>	30%	No	Week 13

### Assignment 1 Report (1000 word equivalent)

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

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

Due: **Week 4**

Weighting: **10%**

Assignment 1 Report (1000 word equivalent)

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent

components.

- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

## Assignment 1 Defence

Assessment Type <sup>1</sup>: Viva/oral examination

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Week 4**

Weighting: **15%**

### Assignment 1 Defence

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent components.
- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

## Assignment 2 Report (1000 word equivalent)

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

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

Due: **Week 7**

Weighting: **10%**

### Assignment 2 Report (1000 word equivalent)

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent components.
- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

## Assignment 2 Defence

Assessment Type <sup>1</sup>: Viva/oral examination

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Week 7**

Weighting: **15%**

### Assignment 2 Defence

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent components.
- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

## Project Report (2000-word equivalent)

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

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **Week 13**

Weighting: **20%**

### Project Report (2000-word equivalent)

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent components.
- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

## Project Defence and Demonstration

Assessment Type <sup>1</sup>: Viva/oral examination

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Week 13**

Weighting: **30%**

### Project Defence and Demonstration

On successful completion you will be able to:

- Demonstrate understanding of what a System-on-Chip system is, and its constituent components.
- Demonstrate understanding of issues in hardware/software interface design.
- Work within the constraints imposed by the availability of resources on the System-on-Chip platform to produce designs that meet user requirements.
- Design and test System-on-Chip solutions on using standard hardware description and software programming languages.
- 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

In this course, you will be using Vivado to program the Ultra96 developer board for your assignments and project. Access to Vivado and the Ultra96 will be available during the weekly lectorial time on campus. However, students should ensure they have access to a laptop running Windows or Linux with at least 8 GB of RAM and ~65 GB of free hard disk space that they can use to install the Vivado software. This will ensure that they will be able to work on the assignments and project at home.

Additional learning resources will be provided through the course's iLearn page.

## Unit Schedule

Refer to iLearn for unit schedule

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/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)

## Student Support

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

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [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

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## 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.

## Changes from Previous Offering

This is a new unit.