ELEC4250

System on Chip Design

Session 2, Weekday attendance, North Ryde 2021

School of Engineering

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

Unit convenor and teaching staff Lecturer Alan Kan alan.kan@mq.edu.au Contact via Email Level 1, 50 Waterloo Road Schedule via email
Credit points 10
Prerequisites ELEC3042 or ELEC342 or Admission to MEngElecEng
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: Articulate a mature knowledge of what a System-on-Chip system is, and its constituent components.

ULO2: Investigate, document, and convey 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 real hardware using standard

hardware description and software programming languages.

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

General Assessment Information

There is one assignment, one quiz, and one design project for this course. Assessment of the assignment is through a written submission. The quiz will be conducted through iLearn. Assessment of the project is through a written report, demonstration and oral defense. They will be due according to the given schedule. Late submission of written assessment tasks will attract a penalty of 20% of marks per day. No late attempts of the quiz will be accepted. 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
Assignment Report	20%	No	Week 7
Quiz	20%	No	Week 8
Project Report	20%	No	Week 11
Project Defense and Demonstration	40%	No	Week 12

Assignment Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 20 hours
Due: **Week 7**
Weighting: **20%**

Assignment Report (1000 word equivalent)

On successful completion you will be able to:

- Articulate a mature knowledge of what a System-on-Chip system is, and its constituent components.

- Investigate, document, and convey 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 real hardware using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

Quiz

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 8**
Weighting: **20%**

Quiz during session

On successful completion you will be able to:

- Articulate a mature knowledge of what a System-on-Chip system is, and its constituent components.

Project Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 50 hours
Due: **Week 11**
Weighting: **20%**

Project Report (2000-word equivalent)

On successful completion you will be able to:

- Investigate, document, and convey 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.
- Prepare design documents and reports and communicate and explain design decisions.

Project Defense and Demonstration

Assessment Type [1]: Viva/oral examination

Indicative Time on Task [2]: 10 hours
Due: **Week 12**
Weighting: **40%**

Project Defense and Demonstration

On successful completion you will be able to:

- Articulate a mature knowledge of what a System-on-Chip system is, and its constituent components.
- Investigate, document, and convey 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 real hardware using standard hardware description and software programming languages.
- Prepare design documents and reports and communicate and explain design decisions.

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[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

In this course, you will be using Vivado SDSoC to program the Ultra96 development board for your labs and project. Access to Vivado SDSoC and the Ultra96 will be available during the weekly lectorial time on campus. A Virtualbox VM image with Vivado SDSoC will also be provided to students so that they can work on the assignment and project at home. However, to run the VM image well, students should ensure they have access to a computer/laptop with at least 16 GB of RAM and ~70 GB of free hard drive space.

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://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
- Grade Appeal Policy
- Complaint Management 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/support/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

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) 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

If you are a Global MBA student contact 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/.

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 offering.