



ELEC3043

Digital Systems Design

Session 1, Weekday attendance, North Ryde 2020

School of Engineering

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

(ELEC2042 or ELEC242 or ELEC241) or admission to MEngElecEng

Corequisites

ELEC3042 or ELEC342

Co-badged status

Unit description

This unit is a sequence of lectures and practical work on digital systems design, including: combinational logic, sequential logic, state machines, behavioural specification and description; architecture and structure design; software/hardware co-design; technology mapping, verification and test. For greater complexity we choose Field-Programmable Gate Arrays (FPGAs) and a variety of software provided by the manufacturer (Xilinx), including Boolean equations, schematic entry, state machines, and a high-level design language (Verilog), itself supporting a variety of modes. This unit gives students the skills and knowledge needed to design modern digital systems.

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 fundamental knowledge of digital systems with respect to several different levels of abstraction - from a low-level dealing with electrical circuits through to a high-level dealing with software tools and hardware description languages.

ULO2: describe the principle and operation of field programmable gate arrays (FPGAs)

and the Verilog hardware description language.

ULO3: use Verilog to implement digital circuits on an FPGA.

ULO4: implement digital circuits in complementary metal oxide semiconductor (CMOS) circuits and how this low-level design relates to implementation on FPGAs.

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

General Assessment Information

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

Online quizzes will be given throughout the semester to ensure students are keeping up with the lecture material.

There are 4 labs in this course. They are weighted as follows:

Lab	Weight
Lab 1	3%
Lab 2	10%
Lab 3	12%
Lab 4	15%
Total	40%

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

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

There are no in-class lectures for this course. Video lectures will be made available online in iLearn. This will allow you to learn at your own pace. The lectures should be all you need for understanding the material but if you learn better via reading, or would like to supplement your learning, the recommended text book for the course is "Quick Start Guide to Verilog" by Brock J. LaMeres.

Online quizzes in iLearn will be used to make sure you are keeping up with and understanding the material. Lab work is designed to help with practice of lecture material. The majority of learning will occur by completing the lab exercises. Students should work on the lab exercises at home and come to workshops to get help and test their designs on the FPGA boards.

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult [iLearn](#) for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

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 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

- Assessable online quizzes have been added to make sure students are keeping up with lecture material.
- Lab exercises updated to improve learning and complement lectures.
- Updated lecture material with greater focus on how Verilog is used to implement digital systems.
- Using new textbook.