ELEC875

Reconfigurable Electronics

S2 Day 2017

Dept of Engineering

Contents

Disclaimer

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General Information

Unit convenor and teaching staff
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Monday 1pm-3pm

Lecturer
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Credit points
4

Prerequisites
Admission to MEng

Corequisites

Co-badged status

Unit description
Electronics systems that can adapt to changing conditions allow for higher performance and extended service life as well as creating more robust and tolerant application solutions. This unit will explore reconfigurable electronics from three perspectives: electronics devices useful for reconfiguration, reconfigurable antennas, and integrated 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:

> Understand the need of reconfigurability in the context of modern and future communication systems

Comprehend the functionality of electronic components that are used to achieve reconfigurability

Familiarise with the use of software tools used in designing reconfigurable systems, and demonstrate fluent application of these tools

Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

General Assessment Information

Notifications

Formal notification of assessment tasks, grading rubrics and due dates will be posted on iLearn. Although all reasonable measures are taken to ensure the information is accurate, The University reserves the right to make changes without notice. Each student is responsible for checking iLearn for changes and updates.

Report and Assignment Submissions

Assignment solutions will be posted within a week after the submission date. Submissions will not be accepted once the solution is posted.

All reports and assignments must be submitted electronically through iLearn (in pdf format). Submissions will undergo plagiarism checkers using the turnitin software and any work deemed to have 20% or higher similarity score may incur academic penalty. For more details on the policies of academic penalties relating to academic honesty, please refer to the policies and procedures section below.

Submissions are expected to be typed set in a logical layout and sequence. The expected workload includes preparation of final copies and clear diagrams.

Late submissions

Late submissions will not be accepted without prior arrangement made at least one week before the submission date. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies.

Grading and passing requirement for unit

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

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).

Student Responsibilities

Be familiar with University policy and College procedures and act in accordance with those policy and procedures.

It is the responsibility of the student to retain a copy of any work submitted. Students must produce these documents upon request. Copies should be retained until the end of the grade

appeal period each term.

Student is to perform the required due diligent for their assessment grade and rectify as soon as possible upon finding any errors.

Assessment Tasks

Name	Weighting	Hurdle	Due
In-Class Quiz	20%	No	Week 6
Assignment	20%	No	Week 8
Design Project	20%	No	Week 8
Research Case Study	40%	No	Week 12

In-Class Quiz

Due: **Week 6**
Weighting: **20%**

Invigilated quiz during the lecture time.

On successful completion you will be able to:
- Understand the need of reconfigurability in the context of modern and future communication systems

Assignment

Due: **Week 8**
Weighting: **20%**

Assignment problems will be posted on iLearn.

On successful completion you will be able to:
- Comprehend the functionality of electronic components that are used to achieve reconfigurability

Design Project

Due: **Week 8**
Weighting: **20%**

Students will work on a design-based modular project and develop a simulation model to study the characteristics of their design. The project will be assessed through a demonstration.

On successful completion you will be able to:

- Familiarise with the use of software tools used in designing reconfigurable systems, and demonstrate fluent application of these tools

Research Case Study

Due: **Week 12**
Weighting: **40%**

Each student will study a set of selected high-quality peer-reviewed research articles, and provide a critical review of the research area covered by those papers, in the context of relevant material covered in lectures. The review must be written as an article in the format of an IEEE conference publication, with abstract, introduction, conclusions and references, as well as the main body of the paper.

On successful completion you will be able to:

- Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

Delivery and Resources

There will be a sequence of lectures and guest talks during the semester. These lectures will include new material to explore the trends in modern electronic systems requiring reconfigurability and its utilisation, as well as design considerations and methodologies to design such systems. Lecture notes, worked example problems, and software tutorials, will be posted to iLearn.

Software: CST Microwave Studio and CST Design Studio will be used in this unit. The software setup will be provided to students during the lectures and classroom licences will be configured. Students will be able to use these licensed software while on the campus premises, and will be bound be the licence terms of these software.

Reference material will be available through Library:

Research Articles from IEEE Xplore Online Digital Library

"Millimeter Wave Wireless Communications" by Theodore Rappaport, Robert Heath, Robert Daniels and James Murdock (Prentice Hall)

"Antenna theory : analysis and design" by Constantine A. Balanis (Harper & Row)

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/

Results

Results shown in *iLearn*, 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.

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 improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

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

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.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Understand the need of reconfigurability in the context of modern and future communication systems
- Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

Assessment tasks

- In-Class Quiz
- Research Case Study

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Understand the need of reconfigurability in the context of modern and future communication systems
- Comprehend the functionality of electronic components that are used to achieve reconfigurability
- Familiarise with the use of software tools used in designing reconfigurable systems, and demonstrate fluent application of these tools

- Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

Assessment tasks

- In-Class Quiz
- Assignment
- Design Project
- Research Case Study

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Comprehend the functionality of electronic components that are used to achieve reconfigurability
- Familiarise with the use of software tools used in designing reconfigurable systems, and demonstrate fluent application of these tools
- Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

Assessment tasks

- Assignment
- Design Project
- Research Case Study

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Comprehend the functionality of electronic components that are used to achieve reconfigurability
- Familiarise with the use of software tools used in designing reconfigurable systems, and demonstrate fluent application of these tools

Assessment tasks

- Assignment
- Design Project

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcome

- Demonstrate the ability to critique the state-of-the-art literature in the context of reconfigurable electronics systems and develop a research-level review article to present complex information in professional and lay domains

Assessment task

- Research Case Study

Changes in Response to Student Feedback

In response to the student feedback from previous offering, the software and simulation workshops have been scheduled earlier in the term rather than after the mid-term, to allow student more time to learn and familiarise themselves with the software.

Changes since First Published

Date	Description
25/07/2017	The presentation component has been removed from the Research Case Study.