ELEC875

Reconfigurable Antennas and Electronics

S2 Day 2019

School of Engineering

Contents

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General Information

Unit convenor and teaching staff
Unit Convenor
Raheel Hashmi
raheel.hashmi@mq.edu.au
Contact via 98509130
136-44WR

Lecturer
Affan Baba
affan.baba@mq.edu.au
Contact via via email

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:

At the end of this unit, the students will understand the need of reconfigurability in the context of modern and future communication systems

At the end of this unit, the students will be able to comprehend the functionality of electronic components that are used to achieve reconfigurability

At the end of this unit, the students will understand the use of software simulation tools

used in designing reconfigurable systems, and demonstrate application of these tools

At the end of this unit, the students will 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

Grading and passing requirement for unit

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 submissions and Re-submissions

Late submissions will attract a penalty of 10% marks per day. Extenuating circumstances will be considered upon lodgement of a special consideration application.

Resubmissions of work are not allowed after due date.

Assessment Tasks

Name	Weighting	Hurdle	Due
In-Class Quiz	20%	No	Week 7
Design Problem Assignment	20%	No	Week 8
Simulation Project Demo.	20%	No	Week 10
Case Study Report	40%	No	Week 13

In-Class Quiz

Due: **Week 7**
Weighting: **20%**

Invigilated quiz during the lecture time.

On successful completion you will be able to:

- At the end of this unit, the students will understand the need of reconfigurability in the context of modern and future communication systems

Design Problem Assignment

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

Assignment problems will be posted on iLearn at least three weeks before the submission due date.

On successful completion you will be able to:

- At the end of this unit, the students will be able to comprehend the functionality of electronic components that are used to achieve reconfigurability

Simulation Project Demo.

Due: **Week 10**
Weighting: **20%**

Demonstration of a simulation model followed by viva.

On successful completion you will be able to:

- At the end of this unit, the students will understand the use of software simulation tools used in designing reconfigurable systems, and demonstrate application of these tools

Case Study Report

Due: **Week 13**
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 that may be submitted for publication in an IEEE Conference publication, with abstract, introduction, conclusions and references, as well as the main body of the paper. More information and guidelines will be provided on iLearn.

On successful completion you will be able to:

- At the end of this unit, the students will 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 will be available to the students in the university's labs, due to licence restrictions. Students will

be able to use the software within the campus premises. A student version of this software is available for the students to download and use on personal computers. Note that the student version is limited in terms of the problem size (number of mesh cells) that can be simulated.

Reference material will be available through Library:

Research Articles from IEEE Xplore Online Digital Library - recommended by the lecturer

"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 (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.)*

Undergraduate students seeking more policy resources can visit the 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).

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 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

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.

Graduate Capabilities

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

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electronic components that are used to achieve reconfigurability

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Assessment tasks

- In-Class Quiz
- Design Problem Assignment
- Simulation Project Demo.
- Case Study Report

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:

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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

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- Case Study Report

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 outcomes

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