# MTRN4068

## Wireless Mechatronics

Session 2, Special circumstance, North Ryde 2020

*School of Engineering*

# Contents

**Disclaimer**

**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
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Credit points
10

Prerequisites
(MTRN3026 or ELEC326) and (ELEC3024 or ELEC324)

Corequisites

Co-badged status

Unit description
With the advancement of Internet of Things (IoT), microelectromechanical systems (MEMS), smart sensors and actuators, wireless mechatronic devices, services, and systems are experiencing fast growth in a variety of application fields, such as manufacturing, transportation, and healthcare. This unit deals on the theory and practice of designing wireless mechatronic systems using smart actuators, sensors, Interfacing, embedded controller, wireless protocols with adaptive intelligence.

## 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:** Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
>
> **ULO2:** Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
>
> **ULO3:** Design and implement software for wireless mechatronics systems

ULO4: Design and implement systems for remote monitoring and control

# General Assessment Information

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.

# Assessment Tasks

| Name | Weighting | Hurdle | Due |
|------|-----------|--------|-----|
| Practical activity | 10% | No | Week#3 |
| Test#1 | 10% | No | Week#4 |
| Review of wireless mechatornics system | 10% | No | Week#5 |
| Test#3 | 30% | No | Week#14 |
| Practical Project | 10% | No | Week#13 |
| Practical project | 10% | No | Week#8 |
| Test#2 | 20% | No | Week#8 |

## Practical activity

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 8 hours
Due: **Week#3**
Weighting: **10%**

The students will be involved in a practical activity. This will be due on Week#3.

On successful completion you will be able to:
- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
- Design and implement software for wireless mechatronics systems
- Design and implement systems for remote monitoring and control

# Test#1

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 6 hours
Due: **Week#4**
Weighting: **10%**

The first Test will be held on Week#4

On successful completion you will be able to:

- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics

# Review of wireless mechatornics system

Assessment Type [1]: Literature review
Indicative Time on Task [2]: 15 hours
Due: **Week#5**
Weighting: **10%**

The students will study some wireless mechatronics systems and choose one paper to discuss about the strength, weaknesses, challenges and improvements

On successful completion you will be able to:

- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
- Design and implement software for wireless mechatronics systems
- Design and implement systems for remote monitoring and control

# Test#3

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 20 hours
Due: **Week#14**

Weighting: **30%**

The Test#3 will be similar like the Final examination and will be held on Week#14

On successful completion you will be able to:

- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
- Design and implement software for wireless mechatronics systems
- Design and implement systems for remote monitoring and control

# Practical Project

Assessment Type [1]: Design Implementation
Indicative Time on Task [2]: 8 hours
Due: **Week#13**
Weighting: **10%**

The final assessment of the project

On successful completion you will be able to:

- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
- Design and implement software for wireless mechatronics systems
- Design and implement systems for remote monitoring and control

# Practical project

Assessment Type [1]: Design Implementation
Indicative Time on Task [2]: 8 hours
Due: **Week#8**
Weighting: **10%**

The design and implementation of the practical project

On successful completion you will be able to:
- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics
- Design and implement software for wireless mechatronics systems
- Design and implement systems for remote monitoring and control

## Test#2

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Week#8**
Weighting: **20%**

The 2nd test on taught topics, will be held on Week#8

On successful completion you will be able to:
- Implement wireless mechatronics systems including smart sensors, actuators and wireless communicating devices in the context of wireless mechatronics
- Demonstrate a good understanding of data storage, security and cloud computing in the context of wireless mechatronics

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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

All teaching materials will be available in iLearn

# Unit Schedule

Refer to iLearn and lecture notes for the 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). 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). 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 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

The project activitiy will be diferent for 2020. The students will come to campus for a few weeks.

The lectures will be delivered on line.