MTRN3026

Mechatronic Systems

Session 2, Weekday attendance, North Ryde 2021

School of Engineering

Contents

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
Subhas Mukhopadhyay
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9WW 313
Monday 3:0pm to 5:0pm

Tutor
Brady Shearan
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Credit points
10

Prerequisites
(MTRN2060 or ELEC260) and 130cp at 1000 level or above

Corequisites

Co-badged status

Unit description
This unit builds on the instrumentation foundation of MTRN2060 and the system control concepts of ELEC3024. It introduces a number of mechatronic specific topics including AC electric motors and drives, pneumatics, application specific integrated circuits, and advanced control. It requires the application of design and modelling procedures developed in prerequisites, and through medium-scale projects, prepares students to undertake advanced projects.

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: Describe and differentiate the components of mechatronic systems

ULO2: analyse the performance of AC motor drives and controller

ULO3: apply pneumatics, and PLCs integrated with pneumatics, to control mechatronic

systems

ULO4: demonstrate understanding of modelling of mechatronic systems and kinematics of robotic systems

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).

Test#3 is equivalent to Final Examination and is hurdle. You need to obtain 50% in Test#3 to pass the unit.

If you receive special consideration for the final exam, a supplementary exam will be scheduled by the faculty during a supplementary exam period, typically about 3 to 4 weeks after the normal exam period. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
Test#1	10%	No	Week 4
Practical Laboratory Report#1	10%	Yes	Week 5
Test#3	30%	Yes	TBA
Test#2	20%	No	Week 9
Self-study topic and presentation	10%	No	Week 12
Practical Laboratory Report #3	10%	Yes	Week 13
Practical Laboratory Report #2	10%	No	Week 9

Test#1

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

Test #1 on the taught topics from Week#1 to #3.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- demonstrate understanding of modelling of mechatronic systems and kinematics of robotic systems

Practical Laboratory Report#1

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 8 hours
Due: **Week 5**
Weighting: **10%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

The students will conduct practical laboratory and write a report on the first activity. The report will be due on Week#5.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems

Test#3

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 20 hours
Due: **TBA**
Weighting: **30%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Test#3 will be the equivalent of the Final examination and will be held on Week#14.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- apply pneumatics, and PLCs integrated with pneumatics, to control mechatronic systems

Test#2

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Week 9**
Weighting: **20%**

Test#2 will be on the topics from Week#4 to Week#8

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- analyse the performance of AC motor drives and controller

Self-study topic and presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 12 hours
Due: **Week 12**
Weighting: **10%**

The student will choose a topic of their choice and study by themselves. On Week#12, they have to give a presentation. They also need to write a report of 2 pages including around 5 papers.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- analyse the performance of AC motor drives and controller
- apply pneumatics, and PLCs integrated with pneumatics, to control mechatronic systems
- demonstrate understanding of modelling of mechatronic systems and kinematics of robotic systems

Practical Laboratory Report #3

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 8 hours
Due: **Week 13**
Weighting: **10%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

The students will conduct practical laboratory and write a report on the third activity. The report will be due on Week#13.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- demonstrate understanding of modelling of mechatronic systems and kinematics of robotic systems

Practical Laboratory Report #2

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 8 hours
Due: **Week 9**
Weighting: **10%**

The students will conduct practical laboratory and write a report on the 2nd activity. The report will be due on Week#9.

On successful completion you will be able to:

- Describe and differentiate the components of mechatronic systems
- apply pneumatics, and PLCs integrated with pneumatics, to control mechatronic systems

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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

The content for the unit all will be uploaded in iLearn

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

The lecture materials will be available on line.

The 2 hours tutorial will be used for more interaction and problem solving.