



COMP8295

Industrial Applications of IoT

Session 1, In person-scheduled-weekday, North Ryde 2024

School of Computing

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General Information

Unit convenor and teaching staff
Unit Convenor and Lecturer
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By Appointment

Credit points
10

Prerequisites
COMP6010

Corequisites

Co-badged status

Unit description

Numerous companies from different Industry Sectors are making use of the IoT Technology today to simplify, automate, revamp, and control different processes, improve maintenance productivity, and reduce downtimes. This Unit will investigate a range of Industrial IoT Applications in sectors, including but not limited to, Health, Manufacturing, and Urban Infrastructure by examining the key IoT-based Enabling Technologies which facilitate a smart, sustainable, and an inclusive growth. The Unit will also impart skills to design, implement, and experimentally validate different Industrial IoT Applications. It will also examine the Business Use Cases pertinent to IoT Data and Technologies in various Industry Sectors.

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: Evaluate and implement an IoT Architectural Design for specified Industry Sector Requirements.

ULO2: Identify, comprehend, and delineate Research Trends and Challenges in different Industry Sectors from an IoT Perspective.

ULO3: Develop, justify, and implement IoT Business Models and evaluate their applicability for a given Business Context.

ULO4: Collaborate in a Group Project and effectively communicate in both oral and written forms.

ULO5: Identify, analyze, and critically assess Ethical and Legal Implications which stem from various Industrial Applications of IoT and suggest different Strategies for tackling them.

General Assessment Information

Requirements to Pass this Unit

To pass this Unit, a Student must satisfactorily attempt All Assessments and achieve a Total Mark equal to or greater than 50%.

Late Assessment Submission Penalty

Unless a Special Consideration Request has been submitted and approved, a 5% Penalty (of the Total Possible Marks of an Assessment) would be applied for each day an Assessment has not been submitted, i.e., up until the 7th day (including the weekends). Subsequent to the 7th day, a Grade of '0' would be awarded even if the Assessment is submitted. The submission time for all uploaded Assessments is 11:55 PM. A 1-hour grace period would be provided to Students who experience a technical concern.

For any late submission of the Time-sensitive Tasks, such as scheduled Individual Presentation of Assessment 3 – Major Project and scheduled Workshop-based Tasks, please apply for [Special Consideration](#).

Assessments where late submissions would be accepted:

- Assessment 2 – Literature Review : Yes, Standard Late Penalty applies
- Assessment 3 – Major Project (Group-based Written Report) : Yes, Standard Late Penalty applies

Special Consideration

The [Special Consideration Policy](#) aims to support Students who have been impacted by short-term circumstances or events that are serious, unavoidable, and significantly disruptive, and which may affect their performance in an Assessment. If a Student experiences circumstances or events which affect their ability to complete the Assessments in this Unit on time, they should inform the Unit Convenor and subsequently submit a Special Consideration Request through [Ask MQ](#).

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Workshop-based Tasks</u>	20%	No	Weekly
<u>Literature Review</u>	30%	No	Week 6
<u>Major Project</u>	50%	No	Week 13 (Written Report & Presentation)

Workshop-based Tasks

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 20 hours

Due: **Weekly**

Weighting: **20%**

Students will participate in a number of Group-based Brainstorming Tasks and Hands-on Activities in a bid to learn, develop, share, and subsequently practice the Critical Ideas pertinent to the Unit's Content. This Assessment task will further allow the Students to develop and enhance their Teamwork and Professional Communication Skills.

On successful completion you will be able to:

- Evaluate and implement an IoT Architectural Design for specified Industry Sector Requirements.
- Identify, comprehend, and delineate Research Trends and Challenges in different Industry Sectors from an IoT Perspective.
- Develop, justify, and implement IoT Business Models and evaluate their applicability for a given Business Context.
- Collaborate in a Group Project and effectively communicate in both oral and written forms.
- Identify, analyze, and critically assess Ethical and Legal Implications which stem from various Industrial Applications of IoT and suggest different Strategies for tackling them.

Literature Review

Assessment Type ¹: Literature review

Indicative Time on Task ²: 30 hours

Due: **Week 6**

Weighting: **30%**

Students will analyze relevant state-of-the-art Research Literature pertinent to the emerging and promising domain of IoT so as to present critical and succinct arguments on the same.

On successful completion you will be able to:

- Evaluate and implement an IoT Architectural Design for specified Industry Sector Requirements.
- Identify, comprehend, and delineate Research Trends and Challenges in different Industry Sectors from an IoT Perspective.
- Develop, justify, and implement IoT Business Models and evaluate their applicability for a given Business Context.
- Collaborate in a Group Project and effectively communicate in both oral and written forms.
- Identify, analyze, and critically assess Ethical and Legal Implications which stem from various Industrial Applications of IoT and suggest different Strategies for tackling them.

Major Project

Assessment Type ¹: Project

Indicative Time on Task ²: 50 hours

Due: **Week 13 (Written Report & Presentation)**

Weighting: **50%**

Students will learn to design and build an IoT Solution pertinent to a specific Industry Sector / Application. This particular Assessment will also allow the Students to develop and enhance their Teamwork and Professional Communication Skills.

On successful completion you will be able to:

- Evaluate and implement an IoT Architectural Design for specified Industry Sector Requirements.
- Identify, comprehend, and delineate Research Trends and Challenges in different Industry Sectors from an IoT Perspective.
- Develop, justify, and implement IoT Business Models and evaluate their applicability for a given Business Context.
- Collaborate in a Group Project and effectively communicate in both oral and written forms.

- Identify, analyze, and critically assess Ethical and Legal Implications which stem from various Industrial Applications of IoT and suggest different Strategies for tackling them.
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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

Lectures

Live (In-person) Lecture Sessions will be held from Weeks 1 – 6, and would provide an opportunity for Students to ask Questions pertinent to the Weekly Topic(s) and to clarify anything that they might not be sure of. Owing to the Highly Practical Nature of this Unit, the Live (In-person) Lecture Sessions encourage Students to engage in a number of Brainstorming Activities and, therefore, participation in these Sessions is of the essence and critical to Students' success within this Unit. Also, Learnings embedded in these Sessions are indispensable for both Assessment 2 – Literature Review and Assessment 3 – Major Project.

Workshops

Workshops (In-person) will be held from Weeks 7 – 13 and would offer Students an opportunity to learn, develop, and subsequently practice Concepts pertinent to the Unit's Content via Hands-on Tasks in a Lab Setting under the Supervision of the Lecturer. Workshops would also facilitate Students to discuss their respective Problems effectively with the Peers and maximize the Feedback they get on their Work.

Please note that Assessment 3 – Major Project depends, to a considerable extent, on the Learnings embedded in the Workshop Sessions. Therefore, participation in these Sessions is critical to Students' success within this Unit.

Assessments

Assessments will be made available on iLearn and would be submitted via Turnitin.

Recommended Readings

The Unit's Content has been drawn from a variety of sources, including but not limited to, Research Papers, White Papers, and Standards' Documents. Students are, therefore, highly encouraged to read the recommended respective Weekly Reading List in a bid to gain a solid understanding of the Weekly Topics.

Methods of Communication

The Unit Convenor / Lecturer will communicate with the Students via their respective Macquarie University's Email or through Announcements on iLearn. Queries may either be placed on the iLearn Discussion Board or could be sent to adnan.mahmood@mq.edu.au.

COVID Information

For latest information on the University's response to COVID-19, please refer to the Coronavirus Infection Page on the Macquarie University's [website](#). Remember to check this Page regularly in case the information and requirements change during Semester 1, 2024. If there are any changes to this Unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

Week #	Lecture / Workshop
Week 1	Smart Agriculture : The Digital Transformation of the Agriculture Sector
Week 2	Smart Transportation : IoT Reshaping Cities
Week 3	Miscellaneous IoT Applications I – Smart Warehousing and Smart Livestock Farming
Week 4	Miscellaneous IoT Applications II – Smart Mining and Smart Healthcare
Week 5	IoT Project Management I
Week 6	IoT Project Management II
Weeks 7 – 13	Workshops (Programming the Internet of Things), Major Project

Note – This particular Unit is about you and your participation in the same is critical for your success within this Unit since the Learnings embedded in Lectures and Workshops are indispensable for both Assessment 2 – Literature Review and Assessment 3 – Major Project. Please also note that Individual Presentations pertinent to Assessment 3 – Major Project would be held during Week 13. In case of a Lecture or Workshop falling on a Public Holiday, alternate arrangements would be made and Students would be informed well in advance about the same.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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

This particular Unit is being offered for the first time in Semester 1, 2024. Please note that the Unit Convenor highly values Student Feedback so as to continually improve the way this Unit is offered. Accordingly, please feel free to provide Constructive Feedback to the Unit Convenor.

Unit information based on version 2024.02 of the [Handbook](#)