# ENGG8401

**Safety and Risk Engineering**

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

*School of Engineering*

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General Information

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Credit points
10

Prerequisites
Admission to MEngEnvSafetyEng or MEngMgt

Corequisites

Co-badged status
Unit description
The objective of this unit is to provide an understanding of principles and methods of safety and risk engineering applicable to industrial operation. Specific topics include analysis of past accidents; risk assessment methods, risk analysis tools, risk-based decision making, process safety, engineering safety, occupational safety, safety assessment studies, and regulatory perspective of safety.

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](https://www.mq.edu.au/study/calendar-of-dates)

Learning Outcomes
On successful completion of this unit, you will be able to:

- **ULO1**: Demonstrate advanced knowledge of risk and safety engineering.
- **ULO2**: Interpret and synthesise various methodologies and tools applicable in risk analysis and accident modelling.
- **ULO3**: Critically review safety performance in a range of engineering operations.
- **ULO4**: Apply risk-based design decision methods to industrial operations.
- **ULO5**: Design risk-based safety measures for complex engineering operations.

Assessment Tasks

<table>
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<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
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<tr>
<td>Term Project</td>
<td>50%</td>
<td>No</td>
<td>Week 13</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
<td>No</td>
<td>Exam Period</td>
</tr>
<tr>
<td>Mid-term</td>
<td>20%</td>
<td>No</td>
<td>Week 7</td>
</tr>
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This is a group term project. Students are going to work on the project from the beginning of the semester. Each group will work on safety and risk engineering applications with a focus on a particular industry (e.g. oil and gas, mining, cement, etc.). Students will receive feedback on their progress to achieve each individual learning outcome during the semester. This will happen by
breaking the project to different tasks by the lecturer (considering each individual learning outcome), and assess the project based on achieving the learning outcomes individually.

On successful completion you will be able to:

- Demonstrate advanced knowledge of risk and safety engineering.
- Interpret and synthesise various methodologies and tools applicable in risk analysis and accident modelling.
- Critically review safety performance in a range of engineering operations.
- Apply risk-based design decision methods to industrial operations.
- Design risk-based safety measures for complex engineering operations.

**Final Exam**

Assessment Type: Examination
Indicative Time on Task: 2 hours
Due: Exam Period
Weighting: 30%

This will be a 2 hrs open book exam.

On successful completion you will be able to:

- Demonstrate advanced knowledge of risk and safety engineering.
- Interpret and synthesise various methodologies and tools applicable in risk analysis and accident modelling.
- Critically review safety performance in a range of engineering operations.
- Apply risk-based design decision methods to industrial operations.
- Design risk-based safety measures for complex engineering operations.

**Mid-term**

Assessment Type: Quiz/Test
Indicative Time on Task: 2 hours
Due: Week 7
Weighting: 20%

Students will be assessed at the mid of the semester. This will be an open book exam for 2 hours.
On successful completion you will be able to:

- Demonstrate advanced knowledge of risk and safety engineering.
- Interpret and synthesise various methodologies and tools applicable in risk analysis and accident modelling.
- Critically review safety performance in a range of engineering operations.
- Apply risk-based design decision methods to industrial operations.
- Design risk-based safety measures for complex engineering operations.

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 lecture slides, notes, and journal papers sharing with the students

Unit Schedule

Online Lectures: Mondays, 10 am- 12 pm

On-Campus Tutorials (Weeks 2, 4, 6, 8, 10, 12): Wednesdays (11 am- 1 pm), Wednesdays (2 pm- 4 pm), Thursdays (9 am- 11 am) (Please participate in your registered session)

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
- 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). 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

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
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.

Unit information based on version 2024.01R of the Handbook