General Information

<table>
<thead>
<tr>
<th>Unit convenor and teaching staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Convenor &amp; Lecturer</td>
</tr>
<tr>
<td>Shuying Wu</td>
</tr>
<tr>
<td><a href="mailto:shuying.wu@mq.edu.au">shuying.wu@mq.edu.au</a></td>
</tr>
<tr>
<td>Contact via <a href="mailto:shuying.wu@mq.edu.au">shuying.wu@mq.edu.au</a></td>
</tr>
<tr>
<td>Room 146, 3MD</td>
</tr>
<tr>
<td>Wednesday 12:00-2:00pm</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
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<table>
<thead>
<tr>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>((MECH2005 or MECH205) and (MECH2003 or MECH203)) or admission to MEngMechEng</td>
</tr>
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<table>
<thead>
<tr>
<th>Corequisites</th>
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<table>
<thead>
<tr>
<th>Co-badged status</th>
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<table>
<thead>
<tr>
<th>Unit description</th>
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<tbody>
<tr>
<td>This unit examines modern and advanced manufacturing techniques for polymers, ceramics, composites and metal products. The unit covers knowledge in the details of manufacturing processes and their specific requirements for a range of engineering design applications. At the end of this unit, students are expected to demonstrate understandings in the advantages and disadvantages of different manufacturing processes, identify best manufacturing strategies for complex mechanical products and be aware of their cost implications.</td>
</tr>
</tbody>
</table>

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**: Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.
- **ULO2**: Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.
- **ULO3**: Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.
ULO4: Apply and analyse the application of innovative manufacturing techniques.

**General Assessment Information**

**A. Requirements to Pass this Unit**

To pass this unit you must: Achieve a total mark equal to or greater than 50%

**B. Late Assessment Submission Penalty:**

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of ‘0’ will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for **Special Consideration**.

**Assessments where Late Submissions will be accepted**

- Assessment: Lab report and Fieldtrip report – YES, Standard Late Penalty applies
- Assessment: In-class tests and final exam - NO, unless Special Consideration is Granted

**C. 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 assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

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.

**D. Descriptions of Assessment Activities and other information**

- There will be no SGTA in week 1, 7, and 13. All students are however required to attend at least 8 out of 10 SGTAs to receive 5% participation mark.
- There will be three compulsory practicals on Week 6, 7, and Week 11, respectively.
- There will be one-day compulsory fieldtrip in Week 7.
## Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class test</td>
<td>30%</td>
<td>No</td>
<td>Week 4, Week 8, Week 12</td>
</tr>
<tr>
<td>Fieldtrip Report</td>
<td>20%</td>
<td>No</td>
<td>Week 9</td>
</tr>
<tr>
<td>Final examination</td>
<td>35%</td>
<td>No</td>
<td>TBA</td>
</tr>
<tr>
<td>Lab report</td>
<td>10%</td>
<td>No</td>
<td>Report I: Week 8; Report II: Week 12</td>
</tr>
<tr>
<td>Participation in SGTA</td>
<td>5%</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### In-class test

**Assessment Type**: Quiz/Test  
**Indicative Time on Task**: 30 hours  
**Due**: **Week 4, Week 8, Week 12**  
**Weighting**: 30%

This assessment task includes three 30-min quizzes conducted during lecture hours. The quizzes will be held in week 4 (Week 1-3 lecture), Week 8 (Week 4-7 lectures), and Week 12 (Week 8-11 lectures).

On successful completion you will be able to:

- Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.
- Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.
- Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.
- Apply and analyse the application of innovative manufacturing techniques.

### Fieldtrip Report

**Assessment Type**: Report  
**Indicative Time on Task**: 10 hours  
**Due**: **Week 9**  
**Weighting**: 20%

This activity aims to help students understand real-work manufacturing techniques covered in the
lectures. Students are expected to submit a report and reflect on the core manufacturing activities they watched during the trip. This assessment task is compulsory.

On successful completion you will be able to:
- Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.
- Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.
- Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.
- Apply and analyse the application of innovative manufacturing techniques.

**Final examination**

Assessment Type 1: Examination  
Indicative Time on Task 2: 40 hours  
Due: TBA  
Weighting: 35%

The final examination will cover all the content taught in the unit.

On successful completion you will be able to:
- Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.
- Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.
- Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.
- Apply and analyse the application of innovative manufacturing techniques.

**Lab report**

Assessment Type 1: Lab report  
Indicative Time on Task 2: 10 hours  
Due: Report I: Week 8; Report II: Week 12  
Weighting: 10%

This task is to help students to develop knowledge and skills in the design and manufacturing of a specific product. Students are expected to undertake different manufacturing activities and record these activities. Each student is required to submit two lab reports. Report I will cover the lab activities undertaken in Week 6-7 and Report II for lab activities in Week 11. These assessments aim to help reinforce student's learning by connecting the contents in lecture to real-world practices. This assessment task is compulsory.
On successful completion you will be able to:

• Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.

• Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.

• Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.

• Apply and analyse the application of innovative manufacturing techniques.

Participation in SGTA

Assessment Type: Practice-based task
Indicative Time on Task: 0 hours
Due: N/A
Weighting: 5%

Development of knowledge and skills in engineering requires continual practice at authentic tasks. In each weekly SGTA class, you will undertake a range of relevant problems and discussion. Contribution to these tasks will be recorded by teaching staff to constitute this grade.

On successful completion you will be able to:

• Draw upon in-depth knowledge to critique and appraise manufacturing processes for different engineering materials.

• Integrate manufacturing processes including techniques of assemblies to produce complex engineering products.

• Apply knowledge in manufacturing post-treatment processes and the overall cost implications of manufacturing a complex engineering product.

• Apply and analyse the application of innovative manufacturing techniques.

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

• Delivery: This unit will be presented in weekly (double) lectures; and in weekly SGTAs
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
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
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
Learning activity: Fieldtrip is added; new practical activities included.

Assessment tasks: Fieldtrip report and practical reports are added.

Engineers Australia Competency Mapping

<table>
<thead>
<tr>
<th>EA Competency Standard</th>
<th>Unit Learning Outcomes</th>
</tr>
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<tbody>
<tr>
<td>Knowledge and Skill Base</td>
<td></td>
</tr>
<tr>
<td>1.1 Comprehensive, theory-based understanding of the underpinning fundamentals applicable to the engineering discipline.</td>
<td>ULO1 &amp; ULO2 &amp; ULO3 &amp; ULO4</td>
</tr>
<tr>
<td>1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing.</td>
<td></td>
</tr>
<tr>
<td>1.3 In-depth understanding of specialist bodies of knowledge</td>
<td>ULO4</td>
</tr>
<tr>
<td>1.4 Discernment of knowledge development and research directions</td>
<td>ULO1 &amp; ULO2 &amp; ULO3 &amp; ULO4</td>
</tr>
<tr>
<td>1.5 Knowledge of engineering design practice</td>
<td></td>
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<tr>
<td>1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.</td>
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<tr>
<td>Engineering Application Ability</td>
<td></td>
</tr>
<tr>
<td>2.1 Application of established engineering methods to complex problem solving</td>
<td>ULO1 &amp; ULO2 &amp; ULO3 &amp; ULO4</td>
</tr>
<tr>
<td>2.2 Fluent application of engineering techniques, tools and resources.</td>
<td>ULO1 &amp; ULO2 &amp; ULO3 &amp; ULO4</td>
</tr>
<tr>
<td>2.3 Application of systematic engineering synthesis and design processes.</td>
<td></td>
</tr>
<tr>
<td>2.4 Application of systematic approaches to the conduct and management of engineering projects.</td>
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</tr>
</tbody>
</table>
## Professional and Personal Attributes

<table>
<thead>
<tr>
<th>3.1 Ethical conduct and professional accountability.</th>
<th>ULO1 &amp; ULO2 &amp; ULO3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2 Effective oral and written communication in professional and lay domains.</td>
<td></td>
</tr>
<tr>
<td>3.3 Creative, innovative and pro-active demeanour.</td>
<td>ULO4</td>
</tr>
<tr>
<td>3.4 Professional use and management of information.</td>
<td>ULO1 &amp; ULO2 &amp; ULO3</td>
</tr>
<tr>
<td>3.5 Orderly management of self, and professional conduct.</td>
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</tr>
<tr>
<td>3.6 Effective team membership and team leadership</td>
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</tbody>
</table>

### Engineers Australia Competency Mapping