MECH3005

Manufacturing Engineering

Session 1, Weekday attendance, North Ryde 2021

School of Engineering

Contents

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Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face 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
Course Convenor & Lecturer
Shuying Wu
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Wednesdays 2-4pm

Lecturer
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Credit points
10

Prerequisites
((MECH2005 or MECH205) and (MECH2003 or MECH203)) or admission to MEngMechEng

Corequisites

Co-badged status

Unit description
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.

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

Grading and passing requirement for unit

1. There will be no tutorial in week 1, 7, and 13. All students are however required to attend at least 8 out of 10 tutorials to receive 5% participation mark.
2. 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.
3. 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.
4. Late submissions**:** Late submissions will attract a penalty of 25% marks per day. Extenuating circumstances will be considered upon lodgment of an application for special consideration.

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment 1	10%	No	Week 5 (26/Mar, Friday)
Mid-term quiz	10%	No	Week 7 (22/April, Thursday)
Assignment 2	10%	No	Week 7 (23/April, Friday)

Name	Weighting	Hurdle	Due
In-class test	15%	No	Week 4 (18/Mar) Week 8 (29/April) Week 13 (3/June)
Assignment 3	10%	No	Week 12 (28/May, Friday)
Participation Marks	5%	No	Attendance recorded at 8 out of 10 tutorials
Final examination	40%	No	TBA: Exam will be held in formal exam period

Assignment 1

Assessment Type [1]: Project
Indicative Time on Task [2]: 10 hours
Due: **Week 5 (26/Mar, Friday)**
Weighting: **10%**

Assignment 1 will cover the content taught in Week 1-Week 3

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.

Mid-term quiz

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Week 7 (22/April, Thursday)**
Weighting: **10%**

A test assessing the students' knowledge of material delivered up to and including Week 6. The test will be one-hour test during lecturer hours.

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.

Assignment 2

Assessment Type [1]: Project
Indicative Time on Task [2]: 10 hours
Due: **Week 7 (23/April, Friday)**
Weighting: **10%**

Assignment 2 will cover the content taught in Week 4-Week 6

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.

In-class test

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Week 4 (18/Mar) Week 8 (29/April) Week 13 (3/June)**
Weighting: **15%**

The quiz is designed to help students with progressive learning and enhance students' understanding of the unit content that is delivered in the lecture. This Assessment Task is a 30-min quiz. In total, there are three monthly quizzes that will be conducted during lecture hours, starting from Week 4. Week 4 quiz will cover the course materials delivered in Week 1-3; Week 8

quiz will cover the content taught in Week 5-7; Week 13 quiz will include the course materials delivered in Week 9-12.

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.

Assignment 3

Assessment Type [1]: Project
Indicative Time on Task [2]: 10 hours
Due: **Week 12 (28/May, Friday)**
Weighting: **10%**

Assignment 3 will cover the content taught in Week 8-Week 10

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 Marks

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 0 hours
Due: **Attendance recorded at 8 out of 10 tutorials**
Weighting: **5%**

Student Engagement with learning activities

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]: 25 hours
Due: **TBA: Exam will be held in formal exam period**
Weighting: **40%**

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.

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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

This unit will be presented in weekly (double) lectures; and in weekly workshops (10 Tutorials, 4 pracs).

The following textbook is recommended, but not prescribed. FUNDAMENTALS OF MODERN MANUFACTURING: Materials, Processes, and Systems Mikell P. Groover 4th edition, Wiley

Unit Schedule

Please refer to Ilearn for more information.

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.