Module Code	MEU34B06
Module Name	Manufacturing Systems
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Dr. Shuo Yin and Dr. Garret O'Donnell
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: Learning outcome for Manufacturing Systems LO1. Understand manufacturing systems and production control strategies, including Materials Requirements Planning (MRP), Capacity Requirements Planning (CRP), and Just-in-Time (JIT); LO2. Construct a Materials Requirements Plan (MRP) using a bill of materials (BOM) and a master production schedule (MPS); LO3. Understand plant layout strategies (e.g., fixed-position, product, process, and cellular layouts) in relation to production; LO4. Analyse production costs, including direct costs, indirect costs, and overhead costs; LO5. Understand automated technologies and automated production systems in modern manufacturing; LO6. define quality metrics for manufacturing; LO7. understand the role standards in quality and manufacturing systems; LO8. Define possible quality metrics for use case products in advanced manufacturing; LO9. understand digitalisation in manufacturing; LO10. Use life cycle analysis tools to examine life cycle of an engineered product; LO11. Develop a sustainability infographic for selected projects; LO12. Understand role of ISO standards related to manufacturing sustainability; LO13. Define scope of agile PM for new product introduction; **Graduate Attributes: levels of attainment** To act responsibly - Not embedded To think independently - Attained To develop continuously - Introduced To communicate effectively - Not embedded

Module Content	This module provides a general introduction to manufacturing systems. It will explore strategies for operating and optimising the production of products in different varieties and volumes with limited resources and in competitive environments. The impacts of design decisions on manufacturing performance and the physical organisation of plants are explored through various plant layout strategies.
Teaching and Learning Methods	The module encompasses a diverse range of teaching and learning strategies. The module is taught using a combination of lectures, assignments and tutorials. The bulk of the module material (notes) are provided as handouts.

Assessment Details[2]
Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Exams	Two in-class tests scheduled to the end of Weeks 6 and 12, respectively.	LO 1-13	100	14

Reassessment Requirements

As this course is 100% continuous assessment and involves substantial groupwork, supplemental examination will have to be discussed with lecturer

Contact Hours and Indicative Student Workload[2]

Contact hours: 44
Independent Study (preparation for course and review of materials): 5
Independent Study (preparation for assessment, incl. completion of assessment): 5

Recommended Reading List

- Operations Management, Slack, Chambers, Harland and Johnston, 3rd edition, Pitman, 2003
- Production and Operations Management, Heizer and Render, 3rd or later edition, Allyn and Bacon, 2002
- Manufacturing Planning and Control Systems, Vollman, Berry and Whybark, 4th edition, McGraw Hill, 1997

Module Pre-requisite

N/A

Module Co-requisite

N/A

Module Website

N/A

Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.

No

Module Approval Date	02/07/2026
Approved by	
Academic Start Year	2026
Academic Year of Date	2026 - 2027