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| Module Code | MEU33EM5 |
| Module Name | Manufacturing Systems 1 |
| ECTS Weighting¹ | 5 ECTS |
| Semester taught | Semester 2 |
| 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 | <p>On successful completion of this module, students should be able to:</p> <p>Learning outcome for Manufacturing Systems</p> <ol style="list-style-type: none"> 1. describe manufacturing planning and control strategies (e.g. MRP, MRP II, JIT); 2. construct a materials requirement plan from a bill of materials and master schedule using finite and infinite capacity; 3. assess the influence of costs on a plan; 4. link DFM and layout strategies with production planning and control; 5. identify the key differences between product and process layouts; 6. identify and quantify key metrics for creating manufacturing cells; <p>Learning outcomes for Project and wider aspects of Man Sys</p> <ol style="list-style-type: none"> 7. define quality metrics for manufacturing; 8. understand the role standards in quality and manufacturing systems; 9. Define possible quality metrics for use case products in advanced manufacturing; 10. understand digitalisation in manufacturing; 11. Use life cycle analysis tools to examine life cycle of an engineered product; 12. Develop a sustainability infographic for selected projects; 13. Understand role of ISO standards related to manufacturing sustainability; 14. Define scope of agile PM for new product introduction; <p>Graduate Attributes: levels of attainment</p> <p>To act responsibly - Not embedded</p> <p>To think independently - Attained</p> <p>To develop continuously - Introduced</p> <p>To communicate effectively - Not embedded</p> |

Module Content

This module provides a general introduction to operations management of 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 DFM and plant layout strategies. Aspects of project management are considered.

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, tutorials) are provided as handouts.

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| Assessment Details² Please include the following: <ul style="list-style-type: none"> • Assessment Component • Assessment description • Learning Outcome(s) addressed • % of total • Assessment due date | Assessment Component | Assessment Description | LO Addressed | % of total | Week due | | | |
| | Continuous Assessment | Assignment + In class test | LO 1-14 | 100 | 14 | | | |
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| 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 Workload² | <table border="1"> <tr> <td>Contact hours: 44</td> </tr> <tr> <td>Independent Study (preparation for course and review of materials): 5</td> </tr> <tr> <td>Independent Study (preparation for assessment, incl. completion of assessment): 5</td> </tr> </table> | | | | | Contact hours: 44 | Independent Study (preparation for course and review of materials): 5 | Independent Study (preparation for assessment, incl. completion of assessment): 5 |
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| Independent Study (preparation for assessment, incl. completion of assessment): 5 | | | | | | | | |
| Recommended Reading List | <ul style="list-style-type: none"> • 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 | | | | | | | |
| Covid-19 contingencies | The face-to face teaching will be moved to online teaching if Covid-19 outbreaks again. | | | | | | | |
| Module Pre-requisite | N/A | | | | | | | |
| Module Co-requisite | N/A | | | | | | | |
| Module Website | N/A | | | | | | | |

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| Are other Schools/Departments involved in the delivery of this module? If yes, please provide details. | No |
| Module Approval Date | 05/09/2023 |
| Approved by | Nicole Byrne |
| Academic Start Year | 2023 |
| Academic Year of Date | 2023 - 2023 |