

<b>Full Title</b>	Manufacturing Technology (Part-Time)		
<b>Status</b>	Uploaded to Banner	<b>Start Term</b>	2018
<b>NFQ Level</b>	07	<b>ECTS Credits</b>	05
<b>Module Code</b>	MANU07024	<b>Duration</b>	36 Weeks - (36 Weeks)
<b>Grading Mode</b>	Numeric	<b>Department</b>	Mechanical & Industrial Eng
<b>Module Author</b>	Carine Gachon		
<b>Co Authors</b>	Rory Mooney		

### Module Description

This module introduces students to the manufacturing technologies relevant to the MedTech sector. Students will get a basic introduction to materials and material processing technologies which will allow them to identify the right material and process for a given product.

### Learning Outcomes

**On completion of this module the learner will/should be able to:**

1. Describe and critique the main manufacturing technologies relevant to the MedTech Sector
2. Research, identify and justify a system or process for the manufacture of a given product or products.
3. Identify and justify materials for the manufacture of medical devices.

### Indicative Syllabus

Materials and Biomaterials

- Mechanical Properties of Engineering materials.
- Physical Properties of Engineering materials.

Dimensioning and Tolerancing.

Quality control.

Measurement and Inspection.

Metal processing

- Metal cutting
- Heat Treatment
- Materials joining
- Metal forming

Polymer processing

- Extrusion
- Processes based on extrusion
- Calendering
- Polymer blend preparation, mixing
- Moulding and press-moulding
- Injection moulding
  - Blowing
- Thermoforming
- Preparation of polymer foams

Non-traditional manufacturing processes:

- EDM: Solid die sinking and wire erosion

- EBM: Electron beam machining
- IBM: Ion beam machining
- AWJ: Abrasive water-jet machining
- Laser: drilling, cutting and metrology
- Chemical machining: blanking, milling, electro and photo
- Ultrasonic machining
- Water-jet machining
- Rapid Prototyping

### Teaching and Learning Strategy

This module combines online learning, one workshop and a high level of self-learning. Time allocation is given to the lecturer for the online delivery as well as the support and monitoring of the learning. The lecture will cover the basics of materials and material processing technologies. Some of the knowledge will be acquired through videos or personal research. Emphasis will be put on materials and processes relevant to the MedTech Industry in general and the students' workplace in particular. The workshop time will allow the lecturer to demonstrate technologies in the workplace giving an in-depth knowledge of the relevant processes.

### Assessment Strategy

Self-directed assessment such as

- Moodle quizzes to highlight the the information extracted from personal reading or videos.
- Short reports on particular technologies.
- Process study where students will analyse and justify the materials and processes used in the manufacturing of a given product.

Exam to assess the knowledge acquired.

### Repeat Assessment Strategies

A repeat exam will be provided.

Indicative Coursework and Continuous Assessment:		60 %		
Form	Title	Percent	Week (Indicative)	Learning Outcomes
Multiple Choice	Quizzes	30 %	OnGoing	1,2,3
Written Report	Short reports	10 %	Any	2
Written Report	Process study	20 %	Any	2,3

End of Semester / Year Formal Exam:		40 %		
Form	Title	Percent	Week (Indicative)	Learning Outcomes
Closed Book Exam	Exam	40 %	End of Term	1,2,3

Blended Delivery Mode Average Weekly Workload:			1.11 Hours		
Type	Description	Location	Hours	Frequency	Weekly Avg
Online Learning	Online Delivery	Not Specified	1	Weekly	1.00
Practical	Workshop demonstration	Not Specified	4	Once Per Module	0.11

### Recommended Reading Book List

Jones, W., *The Handbook of Modern Manufacturing Techniques*. Oak Tree Press.  
ISBN 1860760708 ISBN-13 9781860760709

### Journal Resources

### Online Resources

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<b>Other Resources</b>

<b>Additional Information</b>

<b>Programme Membership</b>
GA_EMANG_B07 201800 Bachelor of Engineering in Manufacturing Engineering (Part-time)