

Module Title Introduction To Design, Materials And Manufacture	Reference EN1701 SCQF SCQF Level 7 SCQF Points 15 ECTS Points 7.5 Created January 2004 Approved March 2004 Amended October 2014 Version No. 4
Keywords Mechanical and Electrical Engineering Systems, Product Development, Design, Manufacture, Workshop, Teamwork and Decision Making Skills.	

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

EN1600 Professional Skills or equivalent

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

The aim of this module is to provide an introduction of the principles and practice of the role of the engineer in new product development. The student will be able to combine this understanding with basic skills in the analysis of examples of

Mode of Delivery

The module will be essentially student centred but will be supported by lecture, demonstration, industrial visits and video where these are felt to be appropriate. It will involve the student working in a team to tackle problems relating to real electrical / mechanical engineering products. The student will be given set objectives and will in general be expected to follow prescribed procedures.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3,4

existing products.

Component 2	1,2,3,4
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Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1. Identify and apply engineering design methods to analyse design examples.
2. Explain the selection of materials and manufacturing processes in existing examples of products.
3. Assess the influence of customer and organisational needs and constraints on the design process.
4. Understand the concepts of measurements and metrology

Indicative Module Content

This module will be activity centred and will introduce the student to the principles of the engineering design process for product development. It will introduce the principles of design as a process of meeting both customer and organisational needs while taking account of constraints. It will demonstrate the inter-relationship of design, materials, manufacture and test and how these relate to other non-technical factors. Students will learn the principles of

Coursework 2: 1,2,3&4 (30% weighting)

Assessment will involve successful completion of workshop basic activities.

Coursework 1: 1,2,3&4 (70% weighting)

Assessment will be based on practical work and on written and oral presentations of the work carried out. Students will be expected to demonstrate creative but realistic application of the principles of engineering design.

Indicative Bibliography

1. ULRICH, K.T. and EPPINGER, S.D., 2016. Product Design and Development. 6th ed. New York: McGraw-Hill.
2. TIMINGS, R.L., 2000. Manufacturing Technology: volume 1. 2nd ed. Harlow: Longman.
3. CALLISTER W.D. and RETHWISCH, D.G., 2015. Materials Science and Engineering. 9th ed. New York: Wiley.
4. Jack, Hugh, Engineering design, planning, and management. 2022. London, United Kingdom : Academic Press

materials technology including the structure and properties of representative engineering materials. Similarly, students will appreciate the main manufacturing processes and their capabilities and limitations. These principles will be applied in activities which will demonstrate the principles of inventive but realistic design and the criteria for the selection of materials and processes. The principles will be applied in context and the students will consider how market criteria and organisational imperatives affect the optimum solution to a design problem.

Additional Notes

The student will be provided suitable clothing for laboratory and workshop activities as designated by University staff.

Indicative Student Workload

	Full	Part
<i>Contact Hours</i>	Time	Time
Lecture / guest speaker	44	44
<i>Directed Study</i>		
Supervised workshop / Lab	50	50
<i>Private Study</i>		
Private Study	56	56