

Module Title Mechanical Engineering Design 2	Reference EN2700 SCQF SCQF Level 8 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved March 2004 Amended October 2014 Version No. 4
Keywords Material properties and selection; manufacturing & fabrication processes; environmental impact; energy; design management	

This Version is No Longer Current

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

Prerequisites for Module

EN1701 Introduction to Design, Materials and Manufacture or its equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To provide the student with an understanding of the significance of materials, manufacturing needs, environmental constraints and regulation on the design process.

Mode of Delivery

The theoretical aspects of the module are delivered by lectures, seminars and case studies. The approach will be principally student centred. Relevant criteria-based and decision-making strategies for failure analysis and prevention will be covered in lectures and tutorials and also within the laboratory/workshop areas. Case studies will be selected as appropriate to the level of the students' expected understanding. Students may also be taken on industrial visits or receive talks from guest speakers.

Assessment Plan

Learning Outcomes Assessed

Learning Outcomes for Module

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

1. Evaluate the influence of design, materials, manufacture and operating environment on the performance of components and products in their operating environments.
2. Explain the importance of the legal, environmental and social aspects of engineering design.
3. Identify the possible causes of failure in specific components or products.
4. Apply effective integrated design methods to the production of technical solutions to specific problems.

Indicative Module Content

The student will develop an understanding of the impacts of engineering design management decisions in a global context. The environmental impacts implicit in sourcing of raw materials, and the alternatives available to the designer will be highlighted against a basic corporate social responsibility background. The selection of fabrication techniques, effects of material structures on product performance, and eventual

Component 1	1,2
Component 2	3,4

Component 2 is a problem-based coursework including case study and focussing on machine component design (50% weighting).

Component 1 is an investigative coursework report including experimental or workshop activities or reverse engineering (50% weighting).

Indicative Bibliography

1. ASHBY, M., SHERCLIFF, H. and CEBON, D., 2013. Materials. 3rd ed. Oxford: Butterworth-Heinemann.
2. BUDYNAS, R. and NISBETT, K., 2015. Shigley's Mechanical Engineering Design. 10 ed. New York: McGraw-Hill.
3. ASBURY, S. and BALL, R., 2009. Do the right thing: Jargon free guide to Corporate Social Responsibility. IOSH Services Ltd.
4. KLEBANOV, B.M., 2009. Machine Elements, Life and Design. Boca Raton, FL: CRC Press.

Additional Notes

Students will be expected to observe all necessary safety

product disposal are examined. The student, either individually or as part of a group, will be required to research and select from a range of potential solutions to a design problem.

regulations when using laboratory and workshop facilities.

Indicative Student Workload

<i>Contact Hours</i>	Full Time	Part Time
Laboratory / workshop	12	12
Lectures / tutorials	36	36
<i>Directed Study</i>		
Directed Study	27	27
<i>Private Study</i>		
Private Study	75	75