

Module Title Mechanical Engineering Design 1 Keywords Design, Drawing, CAD, Programming, Computer	Reference EN2703 SCQF Level SCQF 8 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved March 2004 Amended October 2014 Version No. 4
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This Version is No Longer Current

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

Prerequisites for Module

EN1601 Product Development or its equivalent.

These techniques will be applied to real world components and systems eg drivetrains or other machinery.

Corequisite Modules

None.

Indicative Student Workload

Precluded Modules

None.

	Full Time	Part Time
<i>Contact Hours</i>		
Directed computer applications	36	36
Lectures/tutorials	32	32

Aims of Module

To provide an introduction to CADD tools and their application to component & system design.

<i>Directed Study</i>		
Supported empirical studies	20	20
<i>Private Study</i>		
Private Study	62	62

Learning Outcomes for Module

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

Mode of Delivery

This is a studio/workshop-based course supplemented by lectures and tutorials.

1. Apply core features of an industry standard technical computer programming environment to a basic level of competence in the solution of engineering analysis and design problems.
2. Apply industry standard CADD software to a basic level of competence in the communication of engineering design.
3. Show competence in applying some of the more advanced features of an industry standard computer programming environment to assist in the solution of a variety of engineering analysis and design problems.
4. Apply some specialist features of industry standard CADD software to a significant level of competence, in the communication of engineering design.

Indicative Module Content

The student, either individually, or as part of a group, will be required to apply a programming environment to solve significant engineering design problems. Typically, gas turbine, driveline components, pressure vessels, heat conduction, electrical networks and structures have been used

Assessment Plan

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

C1:(50% weighting).

Part A - Coursework will take the form of an analysis & design project which will be individually assessed.

Part B - Coursework covering more advanced programming and engineering applications.

C2:(50% weighting).

Part A - Coursework covering basic CADD.

Part B - Covering more advanced features and applications of CADD.

Indicative Bibliography

1. SIMMONS, C.H., 2020. Manual of engineering drawing: technical product specification and documentation to British and international standards. Amsterdam: Butterworth-Heinemann
2. KAUSHIK, K., ZINDANI, D., DAVIM, J.P., 2020. Mastering SolidWorks- Practical Examples. Cham: Springer International Publishing AG

An industry standard CADD package will be used in the communication of design solutions. The elementary application of such packages to the production of parts, drawings and assemblies will be covered.

More advanced features will be explored eg equations, advanced drawing, visualisation, routing, multibody parts, etc.

- 3.BUDYNAS, R.G. and NISBETT, J.K., 2019. Shigley's Mechanical Engineering Design. 11th ed. New York, NY: McGraw-Hill.
- 4.NAGAR, S., 2017. Introduction to MATLAB for engineers and scientists: solutions for numerical computation and modelling. Berkley, CA: Apress L.P.
- 5.HAHN, B.H., VALENTINE, D.T., 2017. Essential MATLAB for Engineers and Scientists. 6th ed. Saint Louis: Elsevier.

Additional Notes

Students will be expected to observe all necessary health safety regulations when using laboratory and workshop facilities.