This Version is No Longer Current
The latest version of this module is available here

MODULE DESCRIPTOR

Module Title

Mechanical Engineering Design 1

Reference	EN2703	Version	5
Created	July 2017	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	August 2017	ECTS Points	7.5

Aims of Module

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

Learning Outcomes for Module

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

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

Module Delivery

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

Module Ref:	EN2703 v5

Indicative Student Workload	Full Time	Part Time
Contact Hours	35	35
Non-Contact Hours	115	115
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	1, 3
Description:	Individual analysis and design project covering fundamental and more advanced programming and engineering applications.				

Component 2

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	2, 4
Description:	A portfolio of CADD output covering basic and more advanced features and applications.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

To pass the module students must achieve at least a grade D overall and a minimum of 35% in both coursework components.

Module Grade	Minimum Requirements to achieve Module Grade:
A	70% and above
B	60-69%
C	50-59%
D	40-49%
E	35-39%
F	34% and below
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	EN1601 Product Development or its equivalent.
Corequisites for module	None.
Precluded Modules	None.

ADDITIONAL NOTES

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

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
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.