

Liverpool John Moores University

Title: Mechanical Engineering Design 1
Status: Definitive
Code: **4113ENG** (120014)
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
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Academic Level: FHEQ4 **Credit Value:** 10 **Total Delivered Hours:** 48
Total Learning Hours: 100 **Private Study:** 52

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Practical	36

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Engineering Graphics Portfolio	50	
Portfolio	AS2	Technical Portfolio	50	

Aims

This module will provide first year students with an introduction to the fundamental principles of mechanical engineering design. It will provide a first course in engineering graphics, enabling students to both interpret and create engineering drawing. It will also provide an introduction to the selection and application of

standard mechanical engineering components in a design context.

Learning Outcomes

After completing the module the student should be able to:

- 1 Interpret an engineering drawing and associated information such as tolerances and fits.
- 2 Create an engineering drawing, using CAD, according to current British Standards.
- 3 Identify the purpose and characteristics of standard mechanical engineering components.
- 4 Propose solutions to simple engineering problems using standard mechanical components.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Engineering Graphics Portfolio	1	2
Technical Portfolio	3	4

Outline Syllabus

Engineering Graphics:

This block of the module will provide students with a first course in engineering graphics, and particularly engineering drawing according to current British Standards. Topics will include:

- *BS 8888:2011 (British Standard for technical product documentation & specification)*
- *Orthographic Projections (1st & 3rd Angle)*
- *3D Projections (Oblique & Isometric)*
- *Drawing Layouts*
- *Sections*
- *Dimensioning*
- *Geometric Tolerancing and Datums*
- *Limits & Fits*
- *Generating 3D CAD models from 2D drawings*
- *Generating Engineering Drawings from 3D CAD models*

Engineering Design:

This block of the module will provide an introduction to the selection and application of standard mechanical engineering components in a design context. Topics will include:

- *Shafts*
- *Bearings*
- *Gears*
- *Keyways*
- *Fasteners*
- *Standards*

Learning Activities

This module will be delivered through an integrated series of lectures supported by tutorials. In addition, students will undertake a series of practical exercises which will be used to compile a pair of portfolios.

Notes

The module is designed to give engineering students the basic engineering design skills and allow them to produce engineering drawings to British Standard using the appropriate software.