Liverpool John Moores University

Title:	Mechanical Engineering Design 2
Status:	Definitive
Code:	**5117ENG** (120018)
Version Start Date:	01-08-2019
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
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Academic Level:	FHEQ5	**Credit Value:**	20	**Total Delivered Hours:**	72
Total Learning Hours:	200	**Private Study:**	128		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	48

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Guided Design Exercise	50	
Report	AS2	Open Design Project	50	

Aims

This module aims to build on the Level 4 Mechanical Engineering Design module by introducing systematic approaches to the design process and to the analysis of mechanical designs for the determination of strength and life. It will provide participants with a practical experience of the design process both as an individual

and within a group.

Learning Outcomes

After completing the module the student should be able to:

1	Apply a systematic process to develop a design from a brief to a solution
2	Design a mechanical system which incorporates properly specified standard components
3	Perform appropriate engineering analysis to support the design process
4	Evaluate designs according to national, international or industry standards

Learning Outcomes of Assessments

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

Guided Design Exercise	1	2	3	4
Open Design Project	1	2	3	4

Outline Syllabus

Design Process
This block will introduce students to formal design methodologies and the design process. This will include phases of design, design management and communicating the process undertaken. Typical process will include:

- *Needs analysis*
- *Specifications*
- *Concept generation evaluation*
- *Embodiment design*
- *Layout design*
- *Detailing and modeling*

Engineering Design
This block will build upon the students' knowledge of standard engineering components by considering design for strength and service life. This will include the use of specifications to determine boundary conditions, loads and other constraints on the design and/or selection of components. In particular:

- *Shafts*
- *Bearings*
- *Gears*
- *Fasteners (Nuts, Bolts & Screws)*

Standards relating to the design of engineering components will also be introduced and incorporated into the requirements of the assessment.

Learning Activities

This module will be delivered through an integrated series of lectures supported by practical sessions. Students will undertake projects, both as individuals and in groups where they will apply what they have learned.

Notes

The Mechanical Engineering Design 2 module aims to build on the level 4 Engineering Design module and enable engineering students to apply a systematic approach to the design process.