

Liverpool John Moores University

Title: Mechanical Engineering Design 2
Status: Definitive
Code: **5106MECH** (121291)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

| Team | Leader |
|--------------------|--------|
| Marco Messina | Y |
| Rob Darlington | |
| Christian Matthews | |
| Allan Carrier | |

Academic Level: FHEQ5 **Credit Value:** 20 **Total Delivered Hours:** 44
Total Learning Hours: 200 **Private Study:** 156

Delivery Options

Course typically offered: Semester 2

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 22 |
| Practical | 22 |

Grading Basis: 40 %

Assessment Details

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|--------------------------|---------------|---------------|
| Report | AS1 | Guided Design Exercise 1 | 50 | |
| Report | AS2 | Guided Design Exercise 2 | 50 | |

Aims

This module aims to build on the skills developed in the Level 4 Engineering Practice 1 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 Design a mechanical system which incorporates properly specified standard components
- 2 Perform appropriate engineering analysis to support the design process
- 3 Evaluate designs according to engineering standards

Learning Outcomes of Assessments

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

| | | | |
|--------------------------|---|---|---|
| Guided Design Exercise 1 | 1 | 2 | 3 |
| Guided Design Exercise 2 | 1 | 2 | 3 |

Outline Syllabus

This module 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 and apply the skills developed in the level 4 Engineering Practice module and enable engineering students to apply a systematic approach to the design process.