

### Summary Information

<b>Module Code</b>	5310MECH
<b>Formal Module Title</b>	Marine Design and Technology
<b>Owning School</b>	Engineering
<b>Career</b>	Undergraduate
<b>Credits</b>	20
<b>Academic level</b>	FHEQ Level 5
<b>Grading Schema</b>	40

### Module Contacts

#### Module Leader

Contact Name	Applies to all offerings	Offerings
Eduardo Blanco Davis	Yes	N/A

#### Module Team Member

Contact Name	Applies to all offerings	Offerings
Musa Bashir	Yes	N/A

#### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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### Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

### Learning Methods

Learning Method Type	Hours
Lecture	22
Tutorial	22

### Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-CTY	CTY	September	12 Weeks

### Aims and Outcomes

<b>Aims</b>	To provide a comprehensive introduction to Marine Engineering, Naval Architecture and Ship Construction. The module will concentrate on main and auxiliary propulsion systems, ship stability and construction features.
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### Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Apply design methodology utilising suitable software to analyse marine components and systems.
MLO2	Evaluate the application of different types of ship propulsion plant and identify the advantages and disadvantages of alternative propulsion systems.
MLO3	Predict ship heel, list, trim and powering resistance.
MLO4	Discuss and illustrate significant features of ship construction.

### Module Content

Outline Syllabus
<p>Marine Systems and Components: Complete reverse engineering design process of marine auxiliary systems and components. Generate component images using appropriate software for illustration of system operating philosophy. Marine Engineering Knowledge: Types of main propulsion machinery and their application to different types of vessels. Auxiliary machinery including boilers, steering gear, refrigeration, emissions control, sewerage treatment. Auxiliary systems including sea water/freshwater cooling, fuel oil, lubricating oil, fire extinguishing and detection. System Design: Piping and instrumentation diagrams (P&amp;ID's) of a typical marine fluid system, pump and valve specification. Ship Stability and Naval Architecture: Ship stability - heel, list and trim. Ship resistance and powering. Ship Construction: Discuss and identify different ship types and identify significant features. Water and weather tightness. Structural terminology for different framing systems, bulkheads and hatches. The function and structure of tanks; double bottoms, sides, wings and peaks.</p>

### Module Overview

### Additional Information

This module will provide a good grounding for those students wishing to pursue a career in the following marine related disciplines or industries: Marine Engineering Operations, Marine Engineering Design, Marine Superintendency, Surveying and Shipbuilding. This module includes content which relates to the following UN Sustainable Development Goals: SDG13 – This module considers how marine engineering designers strive to lower greenhouse gas (GHG) emissions onboard. SDG14 – This module will consider how onboard systems should be designed, operated, and maintained in order to prevent ocean pollution.

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Centralised Exam	Examination	70	2	MLO4, MLO2, MLO3
Report	Report	30	0	MLO4, MLO1