

### Summary Information

Module Code	6105MECH
Formal Module Title	Marine Design and Propulsion
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 6
Grading Schema	40

### Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

### Learning Methods

Learning Method Type	Hours
Lecture	22
Online	22
Tutorial	22

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks
SEP-CTY	CTY	September	12 Weeks

### Aims and Outcomes

Aims	The module aims to analyse many of the critical marine systems associated with ships including aspects of safety within the marine industry
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Solve problems of ship stability, trim and the free surface effect.
MLO2	2	Discuss the role of FSA in the marine industry.
MLO3	3	Predict ship performance and behaviour of ships based on model testing data and analytical techniques.
MLO4	4	Analyse power transmission system.
MLO5	5	Critically analyse modes of vibration in marine machinery systems.

### Module Content

Outline Syllabus	Determine ship stability, hydrostatic curves and free surface effect. Estimate main dimensions, tonnages and design coefficients for a vessel. Estimate ship resistance and powering requirements including the effects of surface roughness and protection. Evaluate design considerations of rudders, propellers, manoeuvring mechanisms and effects on stability. Review the role of formal safety assessment in the marine industry. Steering gear and engine speed control systems. Analyse the performance of diesel engines, steam and gas turbines propulsion plants. Discuss marine fuels, contamination, combustion, emissions, emission control and regulations. Matching of propeller, propulsion plant and hull. Analysis of power transmission systems including: engine balancing, gearing, clutches, and shafting systems.
Module Overview	The module aims to analyse many of the critical marine systems associated with ships including aspects of safety within the marine industry.
Additional Information	To trace the total ship design and redesign processes from setting parameters, to estimate performance and costs to testing the resulting product. To develop an understanding as to the requirements of the marine industry with respect to propulsion and auxiliary plant for ships. To enable an individual to appreciate different types of marine plant and determine the optimum plant for particular installations.

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	70	2	MLO1, MLO2, MLO3, MLO4, MLO5
Portfolio	Portfolio	30	0	MLO1, MLO2, MLO3, MLO4, MLO5

### Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Jin Wang	Yes	N/A

**Partner Module Team**

Contact Name	Applies to all offerings	Offerings
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