

Liverpool John Moores University

Title: Marine Design and Propulsion
Status: Definitive
Code: **6166ENG** (120148)
Version Start Date: 01-08-2018

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

Team	Leader
Jin Wang	Y

Academic Level: FHEQ6 **Credit Value:** 20 **Total Delivered Hours:** 74
Total Learning Hours: 200 **Private Study:** 126

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	48
Tutorial	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Examination	70	2
Portfolio	AS1	Portfolio	30	

Aims

The module aims to analyse many of the critical marine systems associated with ships including aspects of safety within the marine industry

Learning Outcomes

After completing the module the student should be able to:

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

Learning Outcomes of Assessments

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

Examination	1	2	3	4	5
Portfolio	1	2	3	4	5

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.

Learning Activities

A combination of lectures, tutorial, practical sessions supported by a ship visit.

Notes

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.