

Liverpool John Moores University

Title: Marine Design and Technology
Status: Definitive
Code: **5122ENG** (120096)
Version Start Date: 01-08-2019

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

Team	Leader
Geraint Phylip-Jones	Y

Academic Level: FHEQ5 **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
Practical	6
Tutorial	18

Grading Basis: 40 %

Assessment Details

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

Aims

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.

Learning Outcomes

After completing the module the student should be able to:

- 1 Apply design methodology utilising suitable software to analyse marine components and systems
- 2 Debate the application of different types of ship propulsion plant and identify the advantages and disadvantages of alternative propulsion systems.
- 3 Predict ship heel, list, trim and powering resistance.
- 4 Discuss and illustrate significant features of ship construction

Learning Outcomes of Assessments

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

Examination	2	3	4	
Portfolio	1	2	3	4

Outline Syllabus

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;

P&ID's of a typical marine fueld system, pump specification and selection.

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.

Learning Activities

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

Notes

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 Superintendent, Surveying and Shipbuilding.