

## Liverpool John Moores University

Title: SHIP STABILITY  
Status: Definitive  
Code: **5026MAR** (105598)  
Version Start Date: 01-08-2016

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

Team	Leader
Barbara Kelly	Y

**Academic Level:** FHEQ5  
**Credit Value:** 24  
**Total Delivered Hours:** 75  
**Total Learning Hours:** 240  
**Private Study:** 165

### Delivery Options

Course typically offered: Runs Twice - S1 & S2

Component	Contact Hours
Lecture	48
Practical	2
Tutorial	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	75	3
Essay	AS2	Assignment based on case study	25	

### Aims

*To build upon the basic knowledge of ships stability and stress.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate a knowledge of the theories and factors affecting stability and trim and application to merchant ship management.
- 2 Demonstrate a knowledge of the factors affecting stability at moderate and large angles of heel and application to merchant management.
- 3 Demonstrate a knowledge of stability/stress diagrams and stress calculating equipment.

### Learning Outcomes of Assessments

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

EXAM	1	2	3
CW	1	3	

### Outline Syllabus

*Stability: Information, simple transverse, free surface effect, during drydocking. Inclining experiment.*

*Trim and draught calculations.*

*Increase in draught due to list.*

*Angle of heel when turning.*

*Statical stability curves.*

*KN tables and curves including free trim.*

*Wall sided formula and zero GM calculations.*

*Loadline regulations and compliance through GZ curves or simplified data.*

*Effect on GZ curve of varying design, loading or voyage conditions.*

*Angle of loll calculation and correction.*

*Rolling and synchronous rolling and pitching.*

*Grain rules.*

*The effect of damage and flooding on stability, including requirements for passenger vessels and Type A & B vessels and countermeasures to be taken.*

*Effect of bilging on draught, trim, list, freeboard and stability for midship, side and end compartment. Permeability.*

*Causes of stresses and vessels affected by different types.*

*Simple curves for box shaped vessels.*

*Stress calculating equipment and its application.*

*National and IMO regulations concerning stability.*

### Learning Activities

Classroom based lectures and tutorials, with 2 hours practical training on ship stability/stress prediction software in an IT suite.

### Notes

This module provides the underpinning knowledge as described in MO1 and MC1.1.2 of the library of underpinning knowledge for Merchant Navy Deck Personnel. The library document includes the content of STCW 95.