

## Liverpool John Moores University

Title: SHIP STABILITY  
Status: Definitive  
Code: **5017MAR** (105589)  
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:** 12      **Total Delivered Hours:** 40  
**Total Learning Hours:** 120      **Private Study:** 80

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	30
Tutorial	10

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Time constrained test	80	
Essay	AS2	Coursework	20	

### Aims

*To enable the student to gain the knowledge required to safely control the stability of the vessel in accordance with national and international codes and regulations.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate an understanding of hydrostatics, including the interpretation and calculation of loadline information.
- 2 Critically evaluate and apply the theories and factors affecting stability and trim on a vessel.
- 3 Analyse the factors affecting stability at moderate and large angles of heel.

## Learning Outcomes of Assessments

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

CW	1	2	3
CW	2	3	

## Outline Syllabus

*Achimedes principle*

*Calculate the displacement of box and ship shape vessels.*

*Interpretation of loadline and draught marks.*

*Loadline calculations using FWA, DWA and TPC.*

*Stability: Information, transverse, longitudinal, 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.*

*National and IMO regulations concerning stability.*

## Learning Activities

Classroom based lectures and tutorials included software in a PC laboratory.

## Notes

This module covers the STCW Deck Officer requirements regarding ship stability.

