

## Liverpool John Moores University

Title: NAVIGATION FUNDAMENTALS  
Status: Definitive  
Code: **4011MAR** (105573)  
Version Start Date: 01-08-2016

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

Team	Leader
Ewan Kirkbride	Y

**Academic Level:** FHEQ4  
**Credit Value:** 12  
**Total Delivered Hours:** 40  
**Total Learning Hours:** 120  
**Private Study:** 80

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	30
Practical	4
Tutorial	6

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Coursework (time constrained)	60	
Essay	AS2	Report on ShipHandling & Bridge Procedures (Guide 1500 Words)	40	

### Aims

*To provide a detailed understanding of the principles and operation of electronic navigation aids and introduce responses to emergency situations  
To provide an understanding of vessel manoeuvring characteristics.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate an understanding of the principles and operation of Electronic Navigation Equipment
- 2 Demonstrate a basic understanding of the manoeuvring characteristics of vessels.
- 3 Demonstrate an understanding of the planning and preparation of procedures to deal with emergency situations.

## Learning Outcomes of Assessments

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

CW	1	2	3
CW	2	3	

## Outline Syllabus

*Radio Waves: Refraction, reflection, sinusoidal waveforms, wavelength, frequency, Doppler shift*

*Hyperbolic Navigation Systems: Loran-C system: Satellite Navigation Systems: The principles and operation of ECDIS Charts: Vector and raster charts, Underwater Navigation Equipment,*

*Radar and ARPA, plotting OAW triangle, orientation, presentation, false echoes, discrimination, new radar technology. AIS.*

*Turning circles and stopping distances: vessel characteristics that have an effect on a manoeuvre, consideration of propeller specifications, underkeel clearance; wind, current and tidal stream; squat and shallow water effects; interaction, course keeping and altering course by compass;*

*Emergency Situations: planning & preparation, crew/engine/anchor status and procedures*

## Learning Activities

Lectures, tutorials & laboratory work including use of ship simulation facilities.

## Notes

This module delivers the STCW deck officer knowledge necessary to understand ship manoeuvring characteristics, and the use of navigation aids used for navigating ships, including emergency responses.