

## Liverpool John Moores University

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Title: NAVIGATION AIDS  
Status: Definitive  
Code: **4507MARBFC** (101162)  
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering  
Teaching School/Faculty: Blackpool & Fylde College

Team	Leader
Barbara Kelly	Y

**Academic Level:** FHEQ4      **Credit Value:** 12      **Total Delivered Hours:** 58  
**Total Learning Hours:** 120      **Private Study:** 62

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	32

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	written paper	40	2
Report	AS2	Assignment	40	
Report	AS3	Assignment	20	

### Aims

*To provide a detailed appreciation of the principles and operation of electronic navigation aids.*

*To provide an understanding of gyro and magnetic compasses, and steering systems and 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 an understanding of the manoeuvring characteristics of vessels.
- 3 Explain the construction, operation and use of magnetic and gyro compasses and the use of manual steering systems.
- 4 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:

EXAM	1	2	
Assignment	1	2	4
Assignment	3		

## Outline Syllabus

*Radio Waves:*

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

*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;*

*Compasses: types; reading a compass; parts of a compass; repeaters; compass errors; compass alarms and off course alarms*

*Magnetic compass: Earth's magnetic field and its changes with position and time; variation, deviation, construction.*

*Gyro compass: Principles of the gyro compass: properties of a free gyro; errors, control and damping, repeaters,*

*Steering systems: manual steering system components; emergency steering systems , auto-pilot.*

## Learning Activities

Lectures and documentary video shows.

Enrichment of delivery through power-point presentations and the use of bespoke software packages to facilitate learning.

Practical exercises on ship simulator should demonstrate that the specific knowledge

or skill has been transferred and competence achieved.  
Guided and supervised tutorials to facilitate learning and to monitor private study works.

## **Notes**

This module provides a detailed appreciation of the principles of electronic navigational systems and their effective application at sea, and an understanding of compass and steering systems and vessel manoeuvring characteristics. An important element of the course will be the use of simulation to allow the students to practice the use of electronic navigation equipment in realistic scenarios. The simulators will also be used to allow the students to manoeuvre various vessels, and deal with navigational emergencies.

The practical nature of the course means that a larger proportion of the learning hours will consist of practical guided sessions in the simulators, in addition to the lectures.

This module will utilise the skills and knowledge gained in Module BFCFD1006: Chartwork and Tides and Module BFCFD1001: Work Based Learning. The knowledge and skills gained in this module will be utilised in module BFCFD2007.