Liverpool John Moores University

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Title:	ENGINEERING & SPECIALISM
Status:	Definitive
Code:	**4505MARBFC** (101160)
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:**	43
Total Learning Hours:	120	**Private Study:**	77		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Tutorial	6
Workshop	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	written paper	30	1
Report	AS2	Coursework	30	
Report	AS3	Coursework	40	

Aims

To develop advanced understanding of the design and operating principles of marine power plants, the function of a vessel's auxiliary machinery and the application of control systems to be found in the marine environment.

Learning Outcomes

After completing the module the student should be able to:

1 Describe the operating principles of marine power plants
2 Describe the function and operation of a vessel's auxiliary machinery
3 Use engineering terms and describe the concepts of control systems
4 Demonstrate an understanding of an area of engineering relevant to the student's area of interest.

Learning Outcomes of Assessments

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

EXAM	1	2	3
Coursework	1	2	3
Coursework	4		

Outline Syllabus

Marine power plants
Power plant: diesel propulsion and associated systems; layout of steam turbine and associated plant (eg boiler and turbine operations, etc.); layout of gas turbine and associated plant; critical aspects and operational limitations of each type of power plant
Transmission of power: gear boxes, thrust block, shaft bearings, sealing arrangements; variations relating to type of power plant
Factors affecting fuel consumption: propeller pitch and slip; fuel consumption calculations; conservation of fuel
Auxiliary machinery
Support systems: auxiliary boilers; distillation and freshwater systems; pumps; refrigeration and air conditioning systems; ventilation; sewage treatment plant; oily water separation and oil filtering; incinerators; electrical power generation and distribution; stabilisers
Steering and manoeuvring systems: ram and rotary systems; telemotor and transmission system; auxiliary and emergency steering systems; thrusters
Regulations: safety of life at sea (SOLAS), marine pollution (MARPOL), relevant merchant shipping (M) notices and statutory instruments
Control systems
Marine engineering terms:
Principles of control systems:
Function and operation: control systems such as, data loggers, mimic diagrams, analogue and digital displays; shipboard applications of control systems
Bridge control: principles of bridge control, fail safe, fail run and safety interlocks for a range of systems, engines and turbines, requirements for plant monitoring and alarm systems for unattended machinery spaces (UMS); integrated bridge systems

Learning Activities

Formal lectures enhanced by the use of videotaped material, models and computer simulation.

Notes

This module introduces the student to the operation of marine power plants, auxiliary machinery and control systems. In addition the student has an opportunity to carry out an investigation into an area of engineering that is relevant to the student's interests and area of work.
The knowledge gained in this module will form the underpinning knowledge for part of the Module BFCFD1001: Work based Learning