Liverpool John Moores University

Title:	Electrical, Electronic and Control Engineering
Status:	Definitive
Code:	**5510ALAM** (120776)
Version Start Date:	01-08-2016
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Malaysian Maritime Academy

Team	Leader
Geraint Phylip-Jones	Y

Academic Level:	FHEQ5	**Credit Value:**	24	**Total Delivered Hours:**	153
Total Learning Hours:	240	**Private Study:**	87		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	110
Practical	40

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	50	3
Portfolio	AS2	Portfolio	50	

Aims

To provide students with the knowledge and skill to operate and maintain shipboard electrical machinery and systems with high levels of safety and efficiency.

Learning Outcomes

After completing the module the student should be able to:

1	Recall and discuss the construction and operation of 3 phase ac: generators, protection, distribution and safety systems.
2	Discuss various types of control systems and analyse control system performance.
3	Demonstrate the working principle and construction of different types of ac motors and methods of speed control.
4	Discuss the reliability of general electrical systems and their survey requirements.

Learning Outcomes of Assessments

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

Exam	1	2	3	4
Portfolio	1	2	3	4

Outline Syllabus

Electrical, Electronic and Control Engineering:

1 General electrical systems and requirement
2 Electrical propulsion systems
3 Power distribution system, lighting arrangements and battery charging
4 Generators; construction, protection, operation and maintenance
5 Power distribution systems
6 HV systems
7 AC switchboards & switchgears
8 Transformers, single/three phase
9 AC motors, motor – control and protection
10 Electrical safety in tankers
11 UMS, bridge control and alarm indication system
12 Electromagnetic Interference
13 Fundamentals of Instrumentation, automation and control Systems theory, types of control systems, P, P+I, P+I+D controls, pneumatic/hydraulic/electrical-electronic controls and controller tuning
14 Thyristor, insulated gate bipolar transistor (IGBT)
15 Electrical safety, test equipment, function Test, calibration of sensors and transducers, circuit symbols, wiring diagram and schematic diagram, troubleshooting procedure fault finding, programmable logic controller and microcontrollers

Learning Activities

A combination of lectures, tutorial and practical sessions.

Notes

This module will provide a good grounding for those students wishing to pursue a

career in the following marine related disciplines or industries: Marine Engineering Operations, Marine Engineering Design, Marine Superintendent, Surveying and Shipbuilding.