FU	FREDERICK UNIVERSITY	MAR521/1
	Course Outline	

Course Code:	**MAR521**
Course Title:	**Workshop Training**
Level:	**Postgraduate career-based course**
Credits:	**30 ECTS**
Department:	**Maritime Transport and Commerce / Mechanical Engineering**
Pre-requisites:	**BSc or BEng Mechanical Engineering (or appropriate equivalent)**

Introduction and Rationale:

Modern merchant vessels are complex engineering structures dependent for their operation on a wide variety of mechanical, electrical and electronic systems. Good knowledge and in depth understanding of these systems therefore constitutes a major part of the marine engineering curriculum. Most of these systems are common to many types of vessels although the degree of importance and engineering complexity might vary from case to case and is subject to engineering development and progress.

Aim:

The aim of the course is to provide the fundamental engineering knowledge and practical skills to operate and maintain marine engineering systems on-board a vessel, to meet the requirements of the International Maritime Organisation (IMO) Standards of Training and Certification of Watchkeepers (STCW) for Engineering Officer of the Watch (EOOW) at operational level.

Learning Outcomes:

On completion of this course the student will know:

- Contents of the Code of Safe Working Practices (COSWP)
- Suitable personal protective clothing and equipment (PPE)
- Workshop safety when using hand tools, machine tools and measuring instruments
- Identification and use of hand tools, machine tools and measuring instruments
- Measuring instruments
- The use of appropriate specialized tools and measuring instruments
- Powered hand tools
- Machine tools, centre lathes, milling machine, grinding machines (static and portable)
- Safety and health when welding
- Welding, brazing and soldering
- Principles of different welding methods, electric, gas etc.
- Welded joints in low-carbon steel
- Weld inspection, weld testing, common faults in welded joints
- Thermal cutting
- Use of various types of sealants and packings
- Safety measures to be taken for repair and maintenance with both mechanical and electrical equipment
- Maintenance and repair such as dismantling, adjustment and reassembling of machinery and equipment including:
    - Fastenings, nuts, bolts, studs etc.

- Hydraulic jacks and nuts
- Correct use of torque spanners
- Diesel engine
- Turbocharger
- Boiler
- Boiler water testing
- Liner calibration
- Crankshaft deflections
- Centrifugal pumps
- Reciprocating pumps
- Screw and gear pumps
- Centrifugal separator
- Test procedures for fuels and LO
- Fuel and LO filters
- Valves
- Making a pipeline joint
- High risk pipe and valve connections
- Air compressors
- Heat exchangers (plate and tube types)
- Shafting system
- Refrigerator system
- Electric motors
- Correct electrical wiring connections
- Balancing and fitting bearings
- Electrical and electronic equipment

Deck Machinery

Main Learning and Teaching Activities:

Lectures and supervised practical student activities will provide a framework of all key areas. Students will work individually and/or in groups for their assignments. Computer based learning packages, simulation, Universities resources and industrial visits will support familiarisation with the various types of marine equipment where applicable. Guest lecturers from industry will supplement practical input and experience whenever possible.

Assessment Details:		
Method of assessment	**Weighting %**	**Outline detail**
Practical supervised student activities in the workshop	100%	Each task completed must be signed off in the Student Workshop Training Record Book