Changing lives through learning

Qualification Unit

This unit forms part of a regulated qualification.

Unit Title: Basic Vessel Engineering Systems

Unit Reference Number: J/651/5437

Level: Two (2)

Credit Value: Three (3)

Minimum Guided Learning Hours: 28

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Know how an internal combustion engine works	1.1 Identify engine components
	1.2 Describe the working principles of compression and spark ignition systems
	1.3 Identify engine configurations e.g.: in-line, horizontal, vee engine types
	1.4 Explain the meaning of engine terms e.g. top dead centre, clearance volume, compression ratio
	1.5 Describe engine performance e.g. rpm, power output, fuel consumption, torque
	1.6 Identify components of air induction and exhaust systems including pressure charging
2. Know how diesel engine ancillary systems work	2.1 Identify the components of the following systems and describe how they work: - • Fuel • Cooling • Lubricating • Electrical • Air compressor and starting • Steering
	2.2 Identify suitable materials for use in cooling systems

3.	Know how the power generated is used to propel a vessel	3.1	Describe how power is transmitted from the engine to the propellers using mechanical and electrical transmission
		3.2	Identify main propulsion layouts
4.	Know the purpose of vessel environmental, service and pumping systems	4.1	Identify the heating, fresh and waste water, ventilation and air conditioning, and pumping systems and explain their purpose
		4.2	Identify main legislation covering marine pollution and outline the statutory requirements
5.	Know how to maintain safe operation of a vessel's engineering systems	5.1	Describe the procedures for the safe starting, running and stopping of main propulsion engines and auxiliary systems
		5.2	Describe the procedures for continuous safe operation of vessel machinery
		5.3	Identify the key aspects of law, codes, principles and guidance relating to the continuous safe operation of vessel machinery