Regulated Qualifications Unit and Assessment Specification

Unit title	Basic Vessel Engineering Systems
Regulator unit code	H/602/3882
SQA unit code	FA5W 54

History of changes

Publication date: September 2010

Version: 02 (December 2017)

Version number	Date	Description	Authorised by
02	December 2017	Unit Specification updated to reflect current Ofqual terminology.	Qualifications Officer

Regulated qualifications unit specification

Title	Basic Vessel Engineering Systems
Level	2
Credit value	3

Outcomes **The learner will:**	**Assessment criteria** **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, eg in-line, horizontal, vee engine types. 1.4 Explain the meaning of engine terms, eg top dead centre, clearance volume, compression ratio. 1.5 Describe engine performance, eg 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.

Outcomes The learner will:	Assessment criteria The learner can:
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.

Additional information about the unit
Unit purpose and aim(s)
MCA Approved Engineering Course (AEC) The aim of the unit is to provide knowledge of basic vessel engineering systems.
Unit start date
01/09/2010
Details of the relationship between the unit and relevant national occupational standards (if appropriate)
MNTB/SFIA Marine NOS Units C1, C11, C12. Non pleasure vessels operating in inland and coastal waters ♦ NOS: N113
Details of the relationship between the unit and other standards or curricula (if appropriate)
MNTB/SFIA Underpinning Knowledge Library Documents SFIA Engine Room Watchkeeping Course
Assessment requirements specified by a sector or regulatory body (if appropriate)
Assessment will be by a combination of the following methods — assignment; knowledge based testing; project work; presentation; practical demonstration; other, as agreed by the external verifier.
Endorsement of the unit by a sector or other appropriate body (if required)
Maritime Skills Alliance
Location of the unit within the subject/sector classification system
4.3 Transportation Operations and Maintenance
Name of the organisation submitting the unit
SQA
Guided learning hours
26

Regulated qualifications assessment specification

Assessment (evidence) requirements
The following evidence is required to demonstrate that learners have the appropriate level of knowledge to undertake *Basic Vessel Engineering Systems*. All outcomes and assessment criteria must be achieved. Written and/or recorded oral evidence produced either on or off-the-job is required for the following: ♦ Outcomes 1, 2, 3,4 and 5 This could be achieved through oral questioning of learners. An approved Maritime Skills Alliance (MSA) approved Training Record Book (TRB) should be used to record evidence of achievement.
Guidance on assessment
Short answer written questions and oral interview could be used.