



QCF Unit and Assessment Specification

Unit title	Navigational Mathematics and Science
Ofqual Unit code	T/602/5409
SQA Unit code	H3M0 57
SSC Ref	Unit 58

History of changes

Publication date: March 2013

Version: 01

Version number	Date	Description	Authorised by

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QCF Unit specification

Title	Navigational Mathematics and Science	
Level	3	
Credit value	6	
Learning Outcomes	Assessment Criteria	
The learner will:	The learner can:	
1 Be able to calculate courses and distances.	1.1 Summarise navigational terms relating to surface navigation.	1.2 Apply Plane trigonometry to surface navigation.
	1.3 Apply Spherical trigonometry to surface navigation.	1.4 Calculate courses and distances by: <ul style="list-style-type: none"> ◆ Parallel sailing ◆ Plane sailing ◆ Mercator sailing ◆ Great circle sailing ◆ Composite great circle
	1.5 Calculate estimated time of arrival.	1.6 Describe Loadline limitations.
2 Understand basic theory of ship's magnetic compass.	2.1 Explain the effect of the earth's magnetic field has on a compass.	2.2 Explain the effect the ship's magnetic field has on a compass including: <ul style="list-style-type: none"> ◆ Permanent magnetic field ◆ Induced magnetic field
	2.3 Explain correction of deviations caused by the ship's magnetic fields.	2.4 Describe the components of a compass binnacle.
3 Understand the operation of gyrocompasses.	3.1 Explain the operation of: <ul style="list-style-type: none"> ◆ Free gyroscope ◆ Marine gyroscope 	

Learning Outcomes	Assessment Criteria
The learner will:	The learner can:
	3.2 Explain the errors of the marine gyroscope.

Additional information about the Unit
Unit purpose and aim(s)
Covers competence of person in charge of a navigational watch on any size of vessel operating in any area.
Unit expiry date
28/02/2018
Details of the relationship between the Unit and relevant national occupational standards (if appropriate)
MNTB NOS (Jan 2006) — B03 Plan a navigational voyage
Details of the relationship between the Unit and other standards or curricula (if appropriate)
Seafarer's Training, Certification and Watchkeeping Code.
Assessment requirements specified by a sector or regulatory body (if appropriate)
Maritime Skills Alliance's Assessment Strategy and Maritime and Coastguard Agency requirements.
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
Skills for Justice
Availability for use
Shared
Availability for delivery
01/10/2010

Additional information about the Unit (cont)
Guided Learning Hours
60

QCF Assessment specification

Assessment (evidence) Requirements

The following evidence is required to demonstrate that learners have the appropriate level of knowledge to undertake navigational mathematics and science. All Learning 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:

- ◆ Learning Outcomes 1, 2 and 3

An approved Maritime Skills Alliance (MSA) approved Training Record Book (TRB) should be used to record evidence of achievement.

Guidance on Methods/Instruments of Assessment

Short answer written questions and/or oral interview could be used for all Learning Outcomes.