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| **MSA Unit 77** | **RQF Ref: XXXXX** |
| Title: | **Stability for marine engineers** |
| Level: | **3** |
| Credit value: | **4** |

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| **Learning outcomes - The learner will:** | **Assessment criteria - The learner can:** |
| 1. Be able to describe the effect of a fluid at rest
 | * 1. Describe Archimedes principle
	2. Apply Archimedes principle to floating bodies of simple geometrical form.
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| 1. Be able to describe stability terms and definitions
 | * 1. Describe the following
* Centre of gravity
* Centre of buoyancy
* Metacentric height (box shape only)
* List
* Loll
* Free Surface Effect and effect on GM
* Righting Lever GZ
* Permeability
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| 1. Understand vessel stability and flotation
 | * 1. Describe the factors that affect a vessel's ability to stay afloat
	2. Identify and read assigned load-line markings
	3. Describe the effect of movement on vessel stability
	4. Describe the factors that adversely affect vessel stability
	5. State the existence and purpose of on-board vessel stability information.
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| 1. Be able to complete basic transverse stability calculations
 | * 1. Calculate the change in stability when a mass is added to a vessel
	2. Calculate the change in stability when a mass is moved transversely across the deck of a vessel.
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| **Additional information about the unit** |  |
| Unit aim(s) | To provide the basic knowledge and understanding of stability in an marine engineering context |
| Unit expiry date |  |
| Details of the relationship between the unit and relevant national occupational standards (if appropriate) | MNTB NOS (Jan 2006) – C11 Prepare and operate propulsion machinery and ancillary systemsC12 Operate vessel auxiliaries and service machineryC34 Carry out maintenance of vessel mechanical machinery and systems |
| Details of the relationship between the unit and other standards or curricula (if appropriate) | Maritime and Coastguard Agency Marine Guidance Notice regarding Certificates of Competency – Engine Department,  |
| Assessment requirements specified by a sector or regulatory body (if appropriate) | Maritime Skills Alliance Assessment StrategyMCA certification requirements |
| Endorsement of the unit by a sector or other appropriate body (if required) | MCA MIN (Marine Information Notice) 524 |
| Location of the unit within the subject/sector classification system | Transportation Operations and Maintenance |
| Name of the organisation submitting the unit | Scottish Qualifications Authority on behalf of the Maritime Skills Alliance |
| Availability for use |  |
| Availability for delivery |  |
| Guided Learning Hours | 35 |