**MSQ Unit 39**

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| Title: | **Strength of Materials for Marine Engineers** |
| Level: | **3** |
| Credit value: | **4** |
| Learning outcomes*The learner will:* | Assessment criteria *The learner can:* |
| 1. Be able to determine shear forces for simply supported beams and cantilevers
 | * 1. Calculate reactions for a static, simply supported, beam and cantilever
	2. Draw shear force diagrams for a simply supported beam and cantilever

Determine the point of zero shear |
| 1. Be able to determine the bending moment for simply supported beams and cantilevers
 | * 1. Calculate reactions for a static, simply supported, beam and cantilever
	2. Draw the bending moment diagrams for a simply supported beam and cantilever
	3. Determine the value of the maximum bending moment
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| 1. Be able to solve idealised beam problems using bending theory
 | * 1. Calculate the second moment of area for a simple section
	2. Solve problems involving simple bending theory
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| 1. Be able to solve shaft problems using simple torsion theory
 | * 1. Calculate the polar second moment of area for a shaft of circular cross-section.
	2. Solve problems involving simple torsion theory applied to shafts of circular cross-sectional area.
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| **Additional information about the unit** |  |
| Unit aim(s) | To provide candidates with basic knowledge and understanding of the strength of materials in an 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) | MSA Assessment StrategyMCA Requirements |
| Endorsement of the unit by a sector or other appropriate body (if required) | MCA…. |
| Location of the unit within the subject/sector classification system | Transportation |
| Name of the organisation submitting the unit | Scottish Qualifications Authority |
| Availability for use |  |
| Availability for delivery |  |
| Guided Learning Hours | 40 |