

## **Component Specification**

## Marine Engineering Processes

## NFQ Level 5

### 5N4628

## 1. Component Details

Title	Mar	Marine Engineering Processes		
Teideal as Gaeilge	Pró	Próisis Innealtóireachta Muirí		
Award Class	Min	Minor		
Code	5N4	5N4628		
Level	5	5		
Credit Value	15	15		
Purpose	The kno of s	The purpose of this award is to equip the learner with the knowledge, skill and competence in the engineering operations of small vessels whilst working independently under supervision.		
Learning Outcomes		Learners will be able to:		
	1	Discuss the problems associated with marine corrosion in the selection of component materials		
	2	Explore the construction details and the function of various hull and shell fittings on small vessels		
	3	Suggest the effects on the operational stability of a small vessel due to pumping fluids, transferring weights, adding additional machinery or structural items and free surface effect		
	4	Discuss the function and operation of marine propulsion and auxiliary machinery, their associated equipment and components to include: diesel engine, reduction gearbox, propeller shafting, propeller, steering gear, pumps, hydraulics, pneumatics, electrical and refrigeration systems		

5	Summarise the two and four stroke cycles of an internal combustion engine
6	Explore the principles of aspiration, combustion, scavenging and fuel economy
7	Employ a range of electrical terms to include volts, amperes, ohms, watts, hertz, AC and DC
8	Discuss the need for planned maintenance and record keeping on small vessels
9	Examine the use of fixed and portable safety equipment in emergency situations such as fire and flooding
10	Execute routine maintenance on a range of main and auxiliary machinery, marine batteries, hydraulic and pneumatic systems
11	Detail the procedures required to carry out an emergency steering operation
12	Identify the hazards, associated risks and action required for safe operations on small vessels
13	Interpret Marine Notices, Statutory Instruments and other regulations applying to small vessels
14	Identify the principal health, safety and environmental issues associated with liquid and solid waste transfer and disposal
15	Plan for a voyage to include safety checks, carriage of spares, consumables, safety equipment, tools and manuals
16	Interpret marine electrical, hydraulic, pneumatic and pumping schematic drawings
17	Identify the problems associated with the operations of pumping, refrigeration, hydraulic and pneumatic systems on board small vessels.

### Assessment

# General InformationDetails of FET assessment requirements are set out in<br/>Assessment Guidelines for Providers.

All FET assessment is criterion referenced. Successful achievement of the award is based on learners attaining the required standards of knowledge, skill or competence.

The techniques set out below are considered the optimum approach to assessment for this component. In exceptional

	circumstances providers may identify alternative assessment techniques through the provider's application for programme validation which are <b>reliable</b> and <b>valid</b> but which are more appropriate to their context.
	Assessment of a number of components may be integrated across programmes for delivery, provided that the learning outcomes of each minor award are assessed.
	Group or team work may form part of the assessment, provided each learner's achievement is separately assessed.
	All providers are required to submit an assessment plan as part of their application for programme validation. Assessment Plans will include information relating to scheduling and integration of assessment. See current FET validation guidelines at <u>www.qqi.ie</u> .
Assessment Techniques	In order to demonstrate that they have reached the standards of knowledge, skill and competence identified in all the learning outcomes, learners are required to complete the assessment(s) below.
	The assessor is responsible for devising assessment instruments (e.g. project and assignment briefs, examination papers), assessment criteria and mark sheets, consistent with the techniques identified below and FETAC's assessment requirements.
	Programme validation will require providers to map each learning outcome to its associated assessment technique. See current FET validation guidelines at <u>www.qqi.ie</u> .
	All learning outcomes <b>must</b> be assessed and achieved
	Examination - Theory 60%
	Skills Demonstration 40%
Description	
	Examination - Theory
	An examination provides a means of assessing a learner's ability to recall and apply knowledge, skills and understanding within a set period of time and under clearly specified conditions.
	A theory-based examination assesses the ability to recall, apply and understand specific theory and knowledge.

### **Skills Demonstration**

	A skills demon based learning skills demonsti of tasks that de	stration is used to assess a wide range of practical outcomes including practical skills and knowledge. A ration will require the learner to complete a task or series emonstrate a range of skills.		
Recognition of Prior Learning (RPL)	Learners may l and experience to assess learn B10, see Provi included on the Guidelines at w details.	be assessed on the basis of their prior knowledge e. Providers must be specifically quality assured hers by this means. To do so they must complete der's Quality Assurance Guidelines and be e Register of RPL approved providers. See RPL www.fetac.ie for further information and registration		
Grading	Pass	50% - 64%		
	Merit	65% - 79%		
	Distinction	80% - 100%		
Specific Validation Requirements	There are no s	pecific validation requirements		
Supporting Documentation	None	None		
Access	To access prog have reached t associated with Qualifications. qualification or	To access programmes leading to this award the learner should have reached the standards of knowledge, skill and competence associated with the preceding level of the National Framework of Qualifications. This may have been achieved through a formal qualification or through relevant life and work experience.		
Transfer	Successful cor learner to trans where this corr	Successful completion of this component award enables the learner to transfer to programmes leading to other certificates where this component is a mandatory or an elective requirement.		

### 2. FET Award Standards

QQI award standards are determined within the National Framework of Qualifications (NFQ), <u>http://www.nfq-qqi.com</u>. QQI determines standards for the education and training awards that it makes itself and that are made by providers to whom it has delegated authority to make an award. Providers offering programmes leading to QQI awards **must** have their programme(s) validated in accordance with current validation policy (see <u>www.qqi.ie</u>).

Award standards are designed to be consistent with the NFQ's award classes i.e. major, special purpose, supplemental and minor awards. They are expressed in terms of **learning outcomes** i.e. concise statements of what the learner is expected to know or be able to do in order to

achieve a particular award. Learning outcomes for FET awards are contained within the associated specifications:

AWARD CLASS	STANDARDS	AWARDS
Major Award	Certificate Specification	Certificate (Levels 1 to 5) Advanced Certificate (Level 6)
Supplemental Award	Supplemental Specification	Supplemental Certificate (Level 3 to 6)
Special Purpose	Specific Purpose Specification	Specific Purpose Certificate (Levels 3 to 6)
Minor Award	Component Specification	Component Certificate (Levels 1 to 6)

Award standards are thresholds, they describe standards of knowledge, skill or competence to be acquired, and where appropriate, demonstrated, by a learner before an award may be made.

Award standards will be reviewed from time to time as necessary. Minor changes may be made by the QQI executive outside the review cycle where necessary. Changes to standards are published on QQI's website. Providers with validated programmes and providers with delegated authority to make awards are responsible for monitoring relevant standards and making necessary responses to changes.

### 3. FET Credit

Every FET certificate and component specification includes an FET credit value (Table 1). FET credit is quantified in multiples of 5 FET credits (up to 50 hours of learner effort). Learner effort is based on the time taken by typical learners at the level of the award to achieve the learning outcomes for the award. It includes all learning time involved including: guided learning hours, self-directed learning and assessment.

### Table 1: FET Credit Values

NFQ Level	Major Awards Credit Values	Default Credit Values Minor Awards	Other Permitted Minor Award Credit Values	Special Purpose and Supplemental Award Credit Value Ranges
1	20	5	10	
2	30	5	10	
3	60	10	5,20	>5 and<60
4	90	10	5,15,20	>5 and<90
5	120	15	5,10,30	>5 and <120
6	120	15	5,10,30	>5 and <120

### **Guide to Level**

Learning outcomes at this level include a broad range of skills that require some theoretical understanding. The outcomes may relate to engaging in a specific activity, with the capacity to use the instruments and techniques relating to an occupation. They are associated with work being undertaken independently, subject to general direction.

Strand	Sub-strand	Nature of learning
Knowledge	Breadth	Broad range of knowledge
	Kind	Some theoretical concepts and abstract thinking, with significant depth in some areas.
Know How & Skill	Range	Demonstrate a broad range of specialised skills and tools
	Selectivity	Evaluate and use information to plan and develop investigative strategies and to determine solutions to varied unfamiliar problems
Competence	Context	Act in a range of varied and specific contexts, taking responsibility for the nature and quality of outputs; identify and apply skill and knowledge to a wide variety of contexts
	Role	Exercise some initiative and independence in carrying out defined activities; join and function within multiple, complex and heterogeneous groups
	Learning to Learn	Learn to take responsibility for own learning within a managed environment
	Insight	Assume full responsibility for consistency of self- understanding and behaviour

Extract from 'Determinations for the Outline National Framework of Qualifications': NQAI