Dearbhú Cáilíochta agus Cáilíochtaí Éireann
Quality and Qualifications Ireland

Component Specification

Physics

NFQ Level 5

5N1460

1. Component Details

Title	Physics
Teideal as Gaeilge	Fisic
Award Class	Minor
Code	5N1460
Level	5
Credit Value	15
Purpose	The purpose of this award is to equip the learner with the knowledge, skill and competence to apply the principles of physics to everyday experiences and industrial processes.
Learning Outcomes	Learners will be able to:

1 Investigate forces and their interaction to include gravity and motion utilising appropriate experiments

2 Examine the laws of mechanics and their use in solving problems

3 Comprehend the nature of energy, its different forms and their interchangability

4 Distinguish between heat and temperature, measure temperature using different methods and examine heat transfer

5 Examine the properties of waves including their effects in relation to light and sound

6 Explore the laws of reflection and refraction to include drawing ray diagrams and the application of reflection and refraction in everyday life

7 Explain the nature of sound and its effects in everyday life, including musical instruments

8 Investigate how electricity works, the terms used, the laws that govern it and its application in everyday life

9 Illustrate electromagnetic induction and a range of devices based on effects of a current carrying conductor in a magnetic field

10 Examine the properties of the electron, to include the concept of thermionic emission, the cathode ray tube, X-rays and the photoelectric effect

11 Describe the structure of the Bohr atom to include the explanation of radioactivity and radioactive particles

12 Explain the use of radioactive materials throughout industry, to include nuclear energy

13 Investigate the effects of common physical hazards on the human body, to include their existence in laboratories, using appropriate safety precautions, recognising common hazard symbols and the rights and responsibilities of employers and employees under current health and safety legislation

14 Carry out an appropriate range of experiments and investigations in an accurate and methodical manner covering the principles and application of physics to include reporting appropriately and accurately and analysis of results.

Assessment

General Information

Details of FET assessment requirements are set out in 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 **reliable** and **valid** 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 www.qqi.ie.

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 www.qqi.ie.

All learning outcomes **must** be assessed and achieved

Skills Demonstration	30%
Learner Record	30%
Examination - Theory	40%

Description

Skills Demonstration

A skills demonstration is used to assess a wide range of practical based learning outcomes including practical skills and knowledge. A skills demonstration will require the learner to complete a task or series of tasks that demonstrate a range of skills.

In one or more skills demonstrations, candidates will be observed carrying out at least 5 practical investigations.

The practical investigations will include a broad range of practical skills and knowledge as outlined in the specific learning outcomes across all units.

Candidates will demonstrate adherence to scientific procedures including:

- assembling and handling equipment and materials

- implementation of the process and/or

following guidelines and instructions

- safe working practices.

Candidates will maintain a primary record of results and/or observations and any other influencing factors as part of the skills demonstrations.

The skills may be assessed at any time throughout the learning process.

Learner Record

A learner record is the learner's self-reported and self-reflective record in which he/she describes specific learning experiences, activities, responses and skills acquired.

A personal laboratory notebook will be compiled by candidates.

It will include the laboratory reports of at least 8 practical investigations completed by the candidate. The laboratory report will describe all stages of the procedure from set up to collection of data, analysis and conclusions.

The primary record of results and/or observations and any additional information collected during each of the practical investigations will be included.

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.

The internal assessor will devise a theory-based examination that assesses the candidate¿s ability to recall and apply theory and understanding, requiring responses to a range of short answer and structured questions. These questions may be answered in different media such as in writing or orally.

The examination will be based on a broad range of the learning outcomes and will be 2 hours in duration.

The format of the examination will be as follows:

Section A

12 short answer questions.

Candidates are required to answer 10 (4 marks each).

Section B

4 structured questions ¿ covering the range of the learning outcomes. Candidates are required to answer 3 (20 marks each).

Recognition of Prior Learning (RPL)	Learners may be assessed on the basis of their prior knowledge and experience. Providers must be specifically quality assured to assess learners by this means. To do so they must complete B10, see Provider's Quality Assurance Guidelines and be included on the Register of RPL approved providers. See RPL Guidelines at www.fetac.ie for further information and registration details.
Grading	Pass 50% - 64% Merit 65% - 79% Distinction 80% - 100%
Specific Validation Requirements	There are no specific validation requirements for this award
Supporting Documentation	None
Access	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 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), http://www.nfq-qqi.com. 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 www.qqi.ie).

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.
	Range	Demonstrate a broad range of specialised skills and tools

Know How & Skill	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