The Further Education and Training Awards Council (FETAC) was set up as a statutory body on 11 June 2001 by the Minister for Education and Science. Under the Qualifications (Education & Training) Act, 1999, FETAC now has responsibility for making awards previously made by NCVA.

FETAC
Further Education and Training Awards Council
Comhairle na nDámhachtainí Breisoideachais agus Oiliúna

Module Descriptor

Programmable Logic Controllers

Level 6 C30015

www.fetac.ie

Level 6 Module Descriptor

Summary of Contents

Introduction	Describes how the module functions as part of the national vocational certificate framework.
Module Title	Indicates the module content. This title appears on the learner's certificate. It can be used to download the module from the website www.fetac.ie.
Module Code	An individual code is assigned to each module; a letter at the beginning denotes a vocational or general studies area under which the module is grouped and the first digit denotes its level within the national vocational certificate framework.
Level	Indicates where the module is placed in the national vocational certificate framework, from Level 6 to Level 6.
Credit Value	Denotes the amount of credit that a learner accumulates on achievement of the module.
Purpose	Describes in summary what the learner will achieve on successfully completing the module and in what learning and vocational contexts the module has been developed. Where relevant, it lists what certification will be awarded by other certification agencies.
Preferred Entry Level	Recommends the level of previous achievement or experience of the learner.
Special Requirements	Usually 'none' but in some cases detail is provided here of specific learner or course provider requirements. There may also be reference to the minimum safety or skill requirements that learners must achieve prior to assessment.
General Aims	Describe in 3-5 statements the broad skills and knowledge learners will have achieved on successful completion of the module.
Units	Structure the learning outcomes; there may be no units.
Specific Learning Outcomes	Describe in specific terms the knowledge and skills that learners will have achieved on successful completion of the module.
Portfolio of Assessment	Provides details on how the learning outcomes are to be assessed.
Grading	Provides details of the grading system used.
Individual Candidate Marking Sheets	List the assessment criteria for each assessment technique and the marking system.
Module Results Summary Sheet	Records the marks for each candidate in each assessment technique and in total. It is an important record for centres of their candidate's achievements.
Appendices	Can include approval forms for national governing bodies.
Glossary of Assessment Techniques	Explains the types of assessment techniques used to assess standards.
Assessment Principles	Describes the assessment principles that underpin FETAC approach to assessment.

Introduction

A module is a statement of the standards to be achieved to gain a FETAC award. Candidates are assessed to establish whether they have achieved the required standards. Credit is awarded for each module successfully completed.

The standards in a module are expressed principally in terms of specific learning outcomes, i.e. what the learner will be able to do on successful completion of the module. The other elements of the module - the purpose, general aims, assessment details and assessment criteria - combine with the learning outcomes to state the standards in a holistic way.

While FETAC is responsible for setting the standards for certification in partnership with course providers and industry, it is the course providers who are responsible for the design of the learning programmes. The duration, content and delivery of learning programmes should be appropriate to the learners' needs and interests, and should enable the learners to reach the standard as described in the modules. Modules may be delivered alone or integrated with other modules.

The development of learners' **core skills** is a key objective of vocational education and training. The opportunity to develop these skills may arise through a single module or a range of modules. The core skills include:

- taking initiative
- taking responsibility for one's own learning and progress
- problem solving
- applying theoretical knowledge in practical contexts
- being numerate and literate
- having information and communication technology skills
- sourcing and organising information effectively
- listening effectively
- communicating orally and in writing
- working effectively in group situations
- understanding health and safety issues
- reflecting on and evaluating quality of own learning and achievement.

Course providers are encouraged to design programmes which enable learners to develop core skills.

1	**Title**	**Programmable Logic Controllers**
2	**Code**	**C30115**
3	**Level**	**6**
4	**Value**	**1**
5	**Purpose**	This module will enable the participant to locate faults on a PLC system (non-analogue). The participant will acquire the necessary associated knowledge
6	**Preferred Entry Level**	FETAC Level 5, or equivalent
7	**Special Requirements**	None.

8 General Aims

Learners who successfully complete this module will

8.1	understand the function of a PLC
8.2	identify the standard electrical components used with PLC's and understand their function
8.3	interpret the standard Allocation (Assignment) Lists and input/output circuits associated with PLC systems
8.4	write and interpret short PLC programs int he form of Ladder Logic diagrams and Statement List
8.5	Use editing functions to locate, monitor and alter elements of programs
8.6	locate faults using PLC programmes and documentation
8.7	rectify/report faults

9 UNITS

This module comprises three units

Unit 1 **PLC operation**

Unit 2 **Field devices**

Unit 3 **Programming**

10 Specific Learning Outcomes

Unit 1 **PLC operation**

Learners should be able to:

10.1.1 identify the main components in a PLC c controlled system,
- input board
- output board
- CPU
- power pack
- program input system

10.1.2 outline the function of each component in 10.1.1

10.1.3 list the main hardware and software methods of entering and storing PLC programs

10.1.4 interpret an allocation list and use to locate components on the system

10.1.5 use an allocation list to determine the condition of the inputs and outputs of the PLC

10.1.6 list the major types of PLC fault

Unit 2 **Field devices**

Learners should be able to:

- push buttons,
- levers
- trip rollers,
- reed switches,
- inductive sensors
- capacitive sensors
- photo-cells
- relays and contactors

10.2.2 recognise the standard circuit symbols for these devices

10.2.3	outline the operation of these standard field devices
10.2.4	test the operation of these input devices

Unit 3 **Programming**

Learners should be able to:

10.3.1	list and explain common logic and switching functions of a PLC • AND • OR • NOT • TIMER • COUNTER INTERNAL RELAY (FLAG)
10.3.2	identify the ladder logic and statement list symbols for these functions
10.3.3	interpret Ladder and STL programs
10.3.4	list common editing functions of a PLC • overwrite • delete • insert • search
10.3.5	use these functions to monitor and alter program elements by means of a programming panel
10.3.6	construct a variety of programs (at least 4) as specified in a (supplied) hardwired circuit diagram. Combinational circuits should have examples of interlocks and overrides
10.3.7	locate a fault in a PLC system
10.3.8	replace a field device or report a PLC fault

11 Assessment Summary

Portfolio of course work	**40%**
Project	**40%**
Practical examination	**20%**

11.1 **Portfolio of course work** **40%**

Components: Minimum of 3 specified written examinations

Details: Each examination is of 30 minutes duration
Examination 1 consists of 5 questions on Unit 1.
Examination 2 consists of 10 questions on Unit 2
Examination 3 consists of 3 questions on Unit 3

11.2 Technique **Project 40%**

Details: Design a processes which must have at least six inputs and must control at least four outputs. the program must include at least one of each of the following:

- Keep
- Counter
- Timer

Be aware of safety in your design.

11.3 Technique **Practical examination 20%**

Components: The program for a given system is to be entered into a PLC

Details: Taken on completion of module. Based on practical work covered in the course

13 GRADING

Pass	50 - 64%
Merit	65 - 79%
Distinction	80 - 100%