

## Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering (QCF)

Code: BTECEE4

Guided Learning Hours: 480 Hours

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**Programme Structure:**

The Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering (QCF) is a qualification with a minimum of 120 credits of which 50 credits (earned from Unit 1 to Unit 3) are mandatory. It must contain a minimum of 65 credits at Level 4.

ELITC offers the following units of study for earning a BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering (QCF).

Unit No.	Unit Descriptions	Unit Level	Unit Credit
1	Analytical Methods for Engineers*	4	15
2	Engineering Science*	4	15
3	Project Design, Implementation and Evaluation*	5	20
4	Combinational and Sequential Logic	4	15
5	Programmable Logic Controllers	4	15
6	Management of Projects	4	15
7	Statistical Process Control	5	15
8	Digital and Analogue Devices and Circuits	5	15
<b>Total:</b>			<b>125</b>

\* *Mandatory Core Units*

## Unit Synopsis (\* Unit 1 to Unit 3: Mandatory Core Units)

### Unit 1: Analytical Methods for Engineers\*

#### Objectives

Provide the analytical knowledge and techniques needed to carry out a range of engineering tasks and provide a base for further study of engineering mathematics.

#### Learning outcomes

Upon completion of this unit, student will be able to analyse and model engineering situations and solve problems using:

- Algebraic methods
- Trigonometric methods
- Calculus
- Statistics and Probability.

### Unit 2: Engineering Science\*

#### Objectives

Provide students with an understanding of the mechanical and electrical principles that underpin mechanical and electrically focused engineering systems.

#### Learning outcomes

Upon completion of this unit, student will be able to:

- Determine the behavioural characteristics of elements of static engineering systems
- Determine the behavioural characteristics of elements of dynamic engineering systems
- Apply DC theory to solve electrical and electronic engineering problems
- Apply single-phase AC theory to solve electrical and electronic engineering problems.

### Unit 3: Project Design, Implementation and Evaluation\*

#### Objectives

Develop students' skills of independent enquiry by undertaking a sustained investigation of direct relevance to their vocational, academic and professional development.

#### Learning outcomes

Upon completion of this unit, student will be able to:

- Formulate a project
- Implement the project within agreed procedures and to specification
- Evaluate the project outcomes
- Present the project outcomes.

### Unit 4: Combinational and Sequential Logic

#### Objectives

Provide students with the skills and understanding required to design and build electronic circuits that use combinational and sequential logic.

#### Learning outcomes

Upon completion of this unit, student will be able to:

- Design and build circuits using combinational logic
- Design and build circuits using sequential logic
- Design and evaluate a digital system.

## Unit 5: Programmable Logic Controllers

### Objectives

Investigate programmable logic controller (PLC) concepts and their applications in engineering.

### Learning outcomes

Upon completion of this unit, student will be able to:

- Understand the design and operational characteristics of a PLC system
- Understand PLC information and communication techniques
- Apply programmable logic programming techniques
- Understand alternative implementations of programmable control.

## Unit 6: Management of Projects

### Objectives

Provides an understanding and experience of project management principles, methodologies, tools and techniques that may be used in industry and the public sector.

### Learning outcomes

Upon completion of this unit, student will be able to:

- Understand the principles of project management
- Plan a project in terms of organisation and people
- Manage project processes and procedures.

## Unit 7: Statistical Process Control

### Objectives

Apply relevant statistical techniques used in process quality control and to evaluate a process against a given specification.

### Learning outcomes

Upon completion of this unit, student will be able to:

- Understand the basic types, variations and characteristics of statistical techniques used in process control
- Select data, construct process control charts and initiate a control program for a specified application
- Evaluate process capability against a given product or component quality requirement using modified control chart limits
- Analyse types of variation within a process and record information on that variation.

## Unit 8: Digital and Analogue Devices and Circuits

### Objectives

Develop the knowledge and skills needed to design and test DC power supply systems, operational amplifier circuits and digital electronic circuits.

### Learning outcomes

Upon completion of this unit, student will be able to:

- Design, test and evaluate electronic DC power supply systems
- Design and test operational amplifier circuits
- Design, construct and test digital electronic circuits.

## Entry Requirements:

- Applicants who are at least 18 years of age to satisfy at least one of the following requirements:
  - GCE 'A' Level passes in Mathematics or Science subject or equivalent; or
  - Pearson BTEC Level 3 / WSQ-Advanced Certificate qualification in Engineering or equivalent; or
  - Higher *Nitec* / ITC qualification in Engineering or equivalent; or
  - *Nitec* in Engineering or equivalent may apply for admission under Recognition of Prior Learning (RPL). Shortlisted applicants need to complete a bridging programme conducted by ELITC.
- Mature applicants (at least 21 years of age) with minimum 2 years of relevant working experience but do not possess the required qualifications will be considered on a case by case basis
- International applicants must have English Proficiency with:
  - IELTS (International English Language Testing System) score of at least 5.50; or
  - A level of competence equivalent to a TOEFL (Test of English as a Foreign Language) score of 500 or equivalent
- Applicants should be free from colour appreciation deficiency.

## Duration:

The total minimum required Guided Learning Hours (GLH) for 8 Units is 480 hrs. This programme is offered either as:

- **Full-time** over 9 months which comprises a total of 3 trimesters. All classes will be conducted from 9.00 am to 5.30 pm on weekdays. Full-time students will have an average of 25 GLH per week.
- **Part-time** over 12 months which comprises a total of 4 trimesters. All classes will be conducted 2 sessions per week from 9.00 am to 4.00 pm or 2 evening sessions during weekdays from 6.30 pm to 9.30 pm and 1 weekend session from 9.00 am to 4.00 pm. Part-time students will have an average of 12 GLH per week.

## Training Medium:

This programme is conducted in English.

## Training Methodology:

This programme is delivered through lectures, E-learning, tutorials, lab, hands-on activities, role-plays, case studies, work assignments, group discussions and discussion forums.

## Essential Requirements:

- Scientific Calculator: CASIO FX-570MS / CASIO FX-991MS / SHARP EL-506W / SHARP EL-520W
- Personal Laptop

## Assessment:

Assessments will be conducted through the two components as follows:

- Continuous Assessment Component. This is to assess the student on a continuous basis throughout the entire trimester. This assessment strategy includes quiz, lab assessment, group project, individual work assignment with presentation, group-based assignment with presentations and other forms of assessment.
- Final Assessment Component. This is normally held at the end of a trimester. Most of the units require the students to undertake practical assessment and /or written assessment.

## Grading System:

Each successfully completed unit will be graded a **Pass, Merit or Distinction**.

Unit Grade	Generic Grade Descriptors
Pass	<ul style="list-style-type: none"><li>• All learning outcomes and associated assessment criteria have been met</li></ul>
Merit	<ul style="list-style-type: none"><li>• Pass requirements achieved</li><li>• All Merit grade descriptors achieved</li></ul>
Distinction	<ul style="list-style-type: none"><li>• Pass and Merit requirements achieved</li><li>• All Distinction grade descriptors achieved</li></ul>

## Certification:

Student must achieve a minimum of 120 credits (of which at least 65 must be at Level 4) and pass all the 8 Units to be awarded with Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering (QCF) certificate within 2 years from the registration date.

Student must satisfy the minimum attendance requirements in all the units for the award of Statement of Attendance. Full-time Students, both local and international, must attain a minimum of 90% of scheduled unit hours or not be absent from the unit for consecutive 7 days. As for Part-time Students, the minimum attendance requirement is 80%.

## Progression Pathway:

As this programme earns global recognition, students who have qualified up to Pearson BTEC Level 4 HNC Diploma in Electrical and Electronic Engineering (QCF) would have earned enough credits for direct entry to recognised universities in UK, USA and Australia.

For more information, please visit the degree course finder from Pearson website: <https://degreecoursefinder.pearson.com>.

## Career Prospects:

This programme helps students to gain employment opportunities in the manufacturing as well as the electrical or electronic engineering sector where students may move towards supervisory or managerial positions. This programme also serves as a good training route for students to switch into electrical or electronic engineering sector.