Validation Document

Pearson BTEC Level 4 Higher National Certificate in Electrical and Electronic Engineering for England

2024-2025

1. Programme Summary

Title of Programme	Pearson BTEC Level 4 Higher National Certificate in Electrical and Electronic Engineering for England
Award Types	*HNC*
Contained Awards	*N/A*
Awarding Body	*Pearson Education Ltd*
UCAS Codes	*xxxx*
HECOS Codes	Pearson BTEC Higher National Certificate in Electrical and Electronic Engineering for England: 610/1220/8
References used in the design of the programme	*QAA Subject Benchmark Statement Engineering*
Accrediting Professional or Statutory Body (if applicable)	*N/A*
Mode of study (full and part time)	Full time and part time for all programmes
Duration of study (in years)	L4 HNC Full time 1 year L4 HNC Part time 2 years
Number of weeks per academic year	*32*
Location of Delivery and Faculty	*Grimsby Institute of Further and Higher Education*
Minimum numbers to start the programme	*5*

2. Entry Requirements

Standard offer

HNC - Applicants will normally hold a BTEC Level 3 Diploma or Extended Diploma (or equivalent) in a relevant Engineering discipline. Applicants are also required to hold English and Maths GCSE (or equivalent) at grade C/4.

Non-standard offer

The Institute will also encourage applications from non-traditional learners who lack formal academic qualifications. All such non-traditional applicants will be interviewed, set an appropriate piece of work (a maths assessment) and a judgement made taking into account their academic potential and relevant experience.

Students who have life experience and recent work experience within the sector will be considered on an individual basis. Students will take part in an entry test in relation to the topic that they will cover within this programme, along with an interview that will identify their reason for choosing this course.

Recognition of prior learning

Applicants may be admitted with credit for prior certificated learning (APcL) or work/life experience or other uncertificated learning (APeL) – refer to the Higher Education Quality Handbook.

Students who have successfully completed another relevant programme of study at least at the equivalent level may be eligible to apply for APcL. Claim forms must be supported by the official transcript or certificate of the awarding body of the original qualification and any guidance explaining the allocation of credit and grading scheme used to enable module comparison.

3.   Higher National Classification Weightings

The final award is classified in line with Pearson's regulations for the award of Pass/Merit/Distinction

4.   Aims of the Programme

The Level 4 units lay the foundation of learning by providing a broad introduction to the engineering sector as well as a focused introduction to engineering. This develops and strengthens core skills while preparing students for more specialist subjects at Level 5 or to enter employment with the qualities necessary for job roles that require some personal responsibility. Students will gain a wide range of scientific and engineering knowledge linked to practical skills obtained through research, independent study, directed study and workplace scenarios. Students are involved in vocational activities that help them to develop behaviours (the attitudes and approaches required for a competence) and transferable skills. Transferable skills are those such as communication, teamwork, research and analysis, which are highly valued in higher education and in the workplace. By the end of Level 4 study, students will have sound knowledge of the basic concepts of engineering. They will be competent in a range of subject-specific skills as well as in general skills and qualities relevant to these key areas of engineering.

Higher National Certificate in Electrical and Electronic Engineering for England.

The programme evaluates the underpinning areas of engineering, design, processes, systems and technology, including various branches of science and mathematics.

It is designed to provide students who are seeking to further their career in a range of careers such as electronic circuit design/implementation, digital principles, engineering design and many more engineering career pathways. The HNC provides students who have completed a BTEC Level 3 Diploma or Extended Diploma (or equivalent) in an engineering discipline with a thorough understanding of eight further engineering subjects.

For the Electrical and Electronic Engineering pathway, students take the three mandatory core units, five specialist units.

5.	Programme Learning Outcomes (FHEQ)

No.	Programme Learning Outcomes	Subject Benchmark Reference
1.	Demonstrate knowledge, skills and techniques that all engineers require, irrespective of future specialism, to achieve high performance in the engineering profession.	
2.	Understand specialist knowledge, skills and techniques in order to be successful in a range of careers in engineering at the Associate Engineer or Operational Engineer level.	
3.	Develop the skills necessary to fault find and problem solve in a timely, professional manner, reflecting on their work and contributing to the development of the process and environment they operate within.	
4.	Analyse and evaluate the responsibilities of the engineer within society, working with integrity, regard for cost, sustainability and the rapid rate of change experienced in world class engineering.	

6.	Graduate Attributes and Threshold Characteristics

Level 4
A student achieving level 4 of the programme will have demonstrated the following knowledge, skills and threshold characteristics:

- equip students with the skills, knowledge and understanding they need to achieve high performance in the engineering and manufacturing environment.
- develop students with enquiring minds, who have the abilities and confidence to work across different engineering functions and to lead, manage, respond to change and tackle a range of complex engineering situations.
- provide the core skills required for a range of careers in engineering.
- offer a balance between employability skills and the knowledge essential for students with entrepreneurial, employment or academic ambitions.
- develop students' understanding of the major impact that new digital and software technologies have on the engineering environment.
- provide insight to engineering operations and the opportunities and challenges presented by a global marketplace.
- equip students with knowledge and understanding of culturally diverse organisations, cross-cultural issues, diversity and values.
- to allow flexible study to meet local and specialist needs

7. Program Structure

Programme Structure: Level 4 Higher National Certificate in Electrical and Electronic Engineering for England				
Module Title	Core / Option	Credits	Level	Delivery
Unit 4001: Engineering Design	Core Mandatory	15	4	S1&S2
Unit 4002: Engineering Maths	Core Mandatory	15	4	S1&S2
Unit 4004: Managing a Professional Engineering Project	Core Mandatory	15	4	S1&S2
Unit 4014: Production Engineering for Manufacture	Specialist Mandatory	15	4	S1&S2
Unit 4015: Automation, Robotics and Programmable Logic Controllers (plcs)	Specialist Mandatory	15	4	S1&S2
Unit 4017: Quality and Process Improvement	Specialist Mandatory	15	4	S1&S2
Unit 4019: Electrical and Electronic Principles	Specialist Mandatory	15	4	S1&S2
Unit 4021: Electrical Machines	Specialist Mandatory	15	4	S1&S2

8. Teaching and Learning Strategy

Methods of learning and teaching are designed to support students in becoming active members of a learning community. Students will be expected to work together in an informal environment as well as in formal classes where a culture of dignity, courtesy and mutual respect with staff and their peers is essential. A variety of methods will be used such as lectures, workshops, student led seminars and practical sessions. There may be opportunities to

integrate a work-based or placement opportunity. Students will be visited in the workplace by a member of Institute staff to ensure a positive partnership between the employer / mentor and to monitor that learning in the workplace is effective. Workplace learning is designed to support the development of an employable graduate equipped with the attributes, skills and knowledge to progress within a global market.

Lectures and seminars

Face to face. These are the most common techniques used by tutors. They offer an opportunity to engage with a large number of students, where the focus is on sharing knowledge through the use of presentations. Guest speakers and lecturers will be sourced from the local and national area, including shared expertise with the Grimsby Group.

Workshops and student led learning

These are used to build on knowledge shared via tutors and seminars. Teaching can be more in-depth where knowledge is applied, for example to case studies or real-life examples. Workshops could be student-led, where students present, for example, findings from independent study.

Tutorials

These present an opportunity for focused one-to-one support, where teaching is led by an individual student's requirements. These are timetables and regular for every student.

Virtual Learning Environments (VLEs)

The VLE used is Canvas, already in place and used successfully across the Engineering department.
Use of Microsoft Teams in the classroom and video conferencing opportunities.

Work-based learning

Any opportunity to integrate work-based learning into a curriculum should be taken. This adds realism and provides students with an opportunity to link theory to practice in a way in which case studies do not. Many full-time students are involved in some form of employment, either paid or voluntary, which could be used, where appropriate.

Guest speakers

These could be experts from industry or visiting academics in the subject area that is being studied. They could be used to present a lecture/seminar, a workshop or to contribute to assessment. The objective is to make the most effective use of an expert's knowledge and skill by adding value to the teaching and learning experience.

9.   Support for Student Learning

The needs of disabled learners are taken into account in the design of all learning programmes.

Students will be screened at induction to identify those with individual learning support needs. TEC Partnership has well-established procedures in place to support all identified students through the application and assessments for the Disabled Students' Allowance to secure any specialist equipment or tuition which is required.

Each student is entitled to one tutorial per trimester with the programme leader to discuss individual issues relating to both modules and the programme overall.

In addition to study skills embedded in the programme, TEC Partnership provides an Academic Achievement Service. The Academic Achievement Service will work with students to support them in the development of their study skill abilities and includes interventions such as support towards use of ICT, giving presentations, using formal writing and appropriate academic conventions, avoiding plagiarism, analytical and critical writing skills.

10.   Quality and Standards Indicators

The programme will follow the QA standards of TEC Partnership. The programme has been written with reference to appropriate external reference points.

TEC Partnership undertakes a number of scheduled internal periodic and thematic reviews throughout each academic year to assure itself of the quality and standards of its provision.

External Examiners reports are received by the HE Quality Office and a copy forwarded to the relevant academic area at TEC Partnership. TEC Partnership requires action plans to be created for any actions recommended as a result of student, tutor, moderator or External Examiner comments. These are reported to our HE Committees. TEC Partnership also monitors External Examiner reports and these are reported on through faculty self-evaluation and enhancement documents, the quality enhancement report and the External Examiner's institutional analysis report.

Annual course reviews (AMRs) will take place in line with the requirements of TEC Partnership and actions planned to rectify any weaknesses and further develop the quality of the provision. These AMRs are moderated internally by the Curriculum Manager (or equivalent) and then submitted to the HE Quality Office to ensure key sources such as External Examiner reports are fully reflected upon before being published and also to reduce variability in the quality of information presented.

11.   Methods for evaluating and improving the quality of learning.

All students will have the opportunity to comment on the quality of the learning experience on each module. Staff will also be expected to complete module evaluations for each module that they deliver. This feedback must be analysed by the module leader and the results fed into the annual monitoring report, faculty self-evaluation document and subsequent year's module handbook. Programme and module leaders must give consideration to modification to improve the delivery of any module and this should be recorded in the annual monitoring report and carried forward for minor or major modifications as appropriate.

TEC Partnership's policy requires that all teaching staff should be observed delivering learning at least annually. Teaching and learning that does not reach the minimum expected standard will result in an action plan agreed between the line manager and the member of staff.

Student satisfaction is measured by student surveys on larger courses, on the smaller courses student opinion may be gathered by other survey means. Student representatives are invited to course team meetings and additionally have the opportunity to raise items with the course leader at individual meetings outside the course team.

Further, TEC Partnership facilitates the Student Senate, which consists of student representatives from each HE department. The Student Senate meets on a monthly basis and their remit is to:
• Consider matters relating to the student experience within Higher Education.

- Enhance the Student Voice within TEC Partnership's Higher Education strategic and operational agenda.
- Provide feedback on areas of good practice.
- Put forward suggestions of the development of Institutional policy and strategy.
- Enhance the student learning experience by promoting academic and research events and cultural events on campus.
- Increase student engagement in all aspects of Higher Education quality processes.

12. Management of Ethical issues within the programme.

Equality and fairness are central to the Institutes policies. We promote equality and diversity and treat everyone with equal dignity and worth, while also raising aspirations and supporting achievement. In addition, students with and without disabilities are offered learning opportunities that are equally accessible to them, by means of inclusive study design.

Our Student Support Team ensure all barriers are identified and addressed in order to have equal access to learning. This could take the form of bursary support, travel and meal vouchers, signposted to medical, welfare and social support and SEND assessments and personal learning plans. Adjustments are made with physical and learning impairments.
Recruitment of learners is an open and rigorous process, which ensures fairness and equality.

13. Management of Work Based Learning Opportunities

Work placements are not a requirement in order to undertake and achieve on a HNC or HND programme in Engineering, however, if a placement can be gained, this would be a useful addition to what is covered on the programme to be able to put what has been learned into practice.

14. Resources needed to pass the programme.
Writing materials
Scientific Calculator

Optional – own laptop/tablet

15.   Resources supplied to the student.

Specialised, qualified tutors
Programme and module handbooks where required
Online access to Windows 365 suite
Learning Resource Centre with HE only learning area
PCs / printing always available
1:1 LRC support sessions
An area Success Coach
Engineering workshops
Engineering laboratories

16.   Curriculum Map

Key: WBL – Work-Based Learning, WRL – Work-Related Learning, Comp – Compensation Y or N.

P – Partially achieved learning outcome, F – Fully achieved learning outcome

Module Name	Level	WBL/WRL	Module Leader	Assessment and Weighting	Comp	1	2	3	4
Unit 4001: Engineering Design	4	WRL	Barry Dobbs	15	N	P	P	P	-
Unit 4002: Engineering Maths	4	WRL	Thomas Allsop	15	N	P	–	–	–
Unit 4004: Managing a Professional Engineering Project	4	WRL	Mohammad Orangian	15	N	P	P	P	P
Unit 4014: Production Engineering for Manufacture	4	WRL	TBA	15	N	P	P	P	P
Unit 4015: Automation, Robotics and Programmable Logic Controllers (plcs)	4	WRL	Mohammad Orangian	15	N	P	P	P	–
Unit 4017: Quality and Process Improvement	4	WRL	TBA	15	N	P	P	P	P
Unit 4019: Electrical and Electronic Principles	4	WRL	Mohammad Orangian	15	N	P	P	P	–
Unit 4021: Electrical Machines	4	WRL	Mohammad Orangian	15	N	P	P	P	–

17.   TEC Partnership Graduate Attribute Mapping

Fortitude and Criticality	Assessment References	Module References	To be covered in tutorial
Adaptability to changing situations		Unit 4004: Managing a Professional Engineering Project	
Being productively disruptive		Unit 4004: Managing a Professional Engineering Project	
Resilience		Unit 4004: Managing a Professional Engineering Project	
Preparing for unknown futures		Unit 4004: Managing a Professional Engineering Project	
Finding alternative solutions to problems		Unit 4004: Managing a Professional Engineering Project	

Teamwork	Assessment References	Module References	To be covered in tutorial
Human interaction skills		Unit 4014: Production Engineering for Manufacture	
Leadership and followership skills		Unit 4014: Production Engineering for Manufacture	
Project development and/or management		Unit 4014: Production Engineering for Manufacture	

Presentation	Assessment References	Module References	To be covered in tutorial
Confidence in communication		Unit 4017: Quality and Process Improvement	
Digital skills and adaptability		Unit 4017: Quality and Process Improvement	

		Unit 4017: Quality and Process Improvement	
Timekeeping			
Self-presentation		Unit 4017: Quality and Process Improvement	

Personal Values	Assessment References	Module References	To be covered in tutorial
Professional attitudes and values		Unit 4004: Managing a Professional Engineering Project	
Ethics and morals		Unit 4004: Managing a Professional Engineering Project	
Self-Care and Care of others		Unit 4004: Managing a Professional Engineering Project	