HNC ENGINEERING (General)

Occupational Standard: Engineering Manufacturing Technician

Higher Apprenticeship Standard: Engineering Manufacturing Technician

Department	University Studies
Awarding Body	Pearsons
Full-time Duration	1 Year
Part-time Duration	2 Years
Full-time Annual Fee	£6,360 per year full-time
Part-time Annual Fee	£3,180 per year part-time
Entry Requirements	UCAS Tariff: 48 GCSE English and maths at grade 4/C or above. A BTEC Level 3 Extended Diploma in Engineering A-Levels / T-Levels that demonstrates a strong performance in a relevant subject. Relevant work experience. Our Recognition of Prior Learning policy means that applicants' previous learning and experience can be considered, and they may be awarded certain qualifications or units of a qualification based on that learning or experience.
Study Location	University and Professional Development Centre, 73 Western Way, Bury St Edmunds UK
Subject to Validation*	No Meeting the requirements of the Occupational Standards relates to: • The knowledge, skills, and behaviours for identified job roles associated with the relevant Occupational Standards.
HECOS CODE	100202 – Manufacturing Engineering
COURSE CODE	Application through University Studies web-site – Apply Now for Full Time and Part Time study.

Additional Potential Costs	Outside of course fees, there are some additional costs associated with the completion of the programme. A small amount £45 should be allowed for sundry items like calculators and drawing equipment Additional costs may include the purchase of core texts – we acknowledge individuals may prefer hard copy core texts for annotation and reference.
Narrative	The HNC in Engineering (General) program is the perfect starting point for those who seek to work in engineering. Studying with us full time, two days a week; or part time, one day a week at the University and Professional Development Centre, you'll not only gain valuable knowledge but also the opportunity to acquire real work experience that can lead to employment with training for specific roles during the rest of the week. **Industry Connections:** We have strong connections with top employers in the Engineering sector. Our college is committed to helping you find suitable roles, ensuring you have the best chance to jumpstart your career.
Career Prospects	The Pearson BTEC Level 4 HNC Engineering (General) is a programme that covers key knowledge, understanding and practical skills for roles with an operational bias: Career Paths may include: - Engineering Technician - Operations Engineering Technician - Maintenance Engineer - Integration and Test Technician - Assistant Project Manager **Path to Higher Education:** This course is your direct route to employment in the Engineering industry. But that's not all—upon completion, you'll also have access to an HND in the second year, opening doors to a BEng (Hons) degree.

Unit Summary	
	Engineering Design (4001) The aim of this unit is to introduce you to the methodical steps that engineers use in creating functional products and processes as an individual or part of a design team; from a design brief to the work, and the stages involved in identifying and justifying a solution to a given engineering need. On successful completion of this unit, you will be able to prepare an engineering design specification that satisfies stakeholders' requirements, implement best practices when analysing and evaluating possible design solutions, prepare a written technical design report, and present your finalised design to a customer or audience. **Engineering Mathematics (4002)** The mathematics that is delivered in this unit is directly applicable to the engineering and manufacturing industry, and it will help to increase your knowledge of the broad underlying principles within this discipline. The aim of this unit is to develop your skills in the mathematical principles and theories that underpin the engineering curriculum. You will be introduced to mathematical methods and statistical techniques to analyse and solve problems within an engineering and manufacturing context. On successful completion of this unit, you will be able to employ mathematical methods within a variety of contextualised examples, interpret data using statistical techniques, and use analytical and computational methods to evaluate and solve engineering and manufacturing sector problems. **Engineering Science (4003)** This unit introduces students to the fundamental laws and applications of the physical sciences within engineering and how to apply this knowledge to find solutions to a variety of engineering problems. Among the topics included in this unit are: international system of units, interpreting data, static and dynamic fundamentals, fluid mechanics and thermodynamics, material properties and failure, A.C./D.C. circuit theories, and electromagnetic principles and properties. On successful completion of this unit, students will be able to interpret and present qualitative and quantitative data using computer software, calculate unknown parameters within mechanical and electrical systems, explain a variety of material properties, and use electromagnetic theory in an applied context. **Managing a Professional Engineering Project (4004)** This unit introduces you to the techniques and best practices required to successfully create and manage an engineering/manufacturing project designed to identify a solution to an engineering need. While carrying out this project you will consider the role and function of engineering in our society, the professional duties and responsibilities expected of engineers together with the behaviours that accompany their actions.

On successful completion of this unit, you will be able to conceive, plan, develop, and execute a successful engineering project, and produce and present a project report outlining and reflecting on the outcomes of each of the project processes and stages. As a result, you will develop skills such as critical thinking, analysis, reasoning, interpretation, decision-making, information literacy, and information and communication technology, and skills in professional and confident self-presentation.

Mechanical Principles (4008)

The aim of this unit is to introduce students to the essential mechanical principles associated with engineering applications. Topics included in this unit are: behavioural characteristics of static, dynamic and oscillating engineering systems including shear forces, bending moments, torsion, linear and angular acceleration, conservation of energy and vibrating systems; and the movement and transfer of energy by considering parameters of mechanical power transmission systems.

On successful completion of this unit students will be able to learn about the underlying principles, requirements, and limitations of mechanical systems.

Production Engineering for Manufacture (4014)

This unit introduces you to the production process for key material types; the various types of machinery used to manufacture products and the different ways of organising production systems to optimise the production process; consideration of how to measure the effectiveness of a production system within the overall context of the manufacturing system; and an examination of how production engineering contributes to ensuring safe and reliable operation of manufacturing.

On successful completion of this unit, you will be able to learn about the role and purpose of production engineering and its relationship with the other elements of a manufacturing system; most appropriate production processes and associated facility arrangements for manufacturing products of different material types; and designing a production system incorporating several different production processes.

Quality and Process Improvement (4017)

This unit introduces you to the importance of quality assurance processes in a manufacturing or service environment and the principles and theories that underpin them. Topics included in this unit are: tools and techniques used to support quality control, attributes and variables, testing processes, costing modules, the importance of qualifying the costs related to quality, international standards for management (ISO 9000, 14000, 18000), European Foundation for Quality Management (EFQM), principles, tools and techniques of Total Quality Management (TQM) and implementation of Six Sigma.

On successful completion of this unit, you will be able to illustrate the processes and applications of statistical process, explain the quality control

	tools used to apply costing techniques, identify the standards expected in the engineering environment to improve efficiency and examine how the concept of Total Quality Management and continuous improvement underpins modern manufacturing and service environments. **Electrical and Electronic Principles (4019)** Electrical engineering is mainly concerned with the movement of energy and power in electrical form, and its generation and consumption. Electronics is mainly concerned with the manipulation of information, which may be acquired, stored, processed or transmitted in electrical form. Both depend on the same set of physical principles, though their applications differ widely. A study of electrical or electronic engineering depends very much on these underlying principles; these form the foundation for any qualification in the field and are the basis of this unit. On successful completion of this unit students will have a good and wide-ranging grasp of the underlying principles of electrical and electronic circuits and devices and will be able to proceed with confidence to further study.
Staff Team	All lecturing staff are vocational specialists. Fully qualified with vast industry knowledge.
Assessment Methods	A variety of assessment methods are used which include written reports, written assignments, literature reviews, group presentations, and the compilation of project work.

Typical Module Diet

All modules are 15 credits unless stated

Indictive Pattern of Delivery

Unit Type	Unit Name (Number relates to Pearson coding)	Period of Delivery
CORE Mandatory	Engineering Design	Semester 1 **(Part-time Y1)**
CORE Mandatory	Engineering Mathematics	Semester 1 **(Part-time Y1)**
CORE Mandatory	Managing a Professional Engineering Project	Semester 1 **(Part-time Y1)**
SPECIALIST Mandatory	Production Engineering for Manufacture	Semester 1 **(Part-time Y1)**
SPECIALIST Mandatory	Quality and Process Improvement	Semester 2 **(Part-time Y2)**
SPECIALIST Mandatory	Engineering Science	Semester 2 **(Part-time Y2)**
SPECIALIST Mandatory	Electrical and Electronic Principles	Semester 2 **(Part-time Y2)**
SPECIALIST Mandatory	Mechanical Principles	Semester 2 **(Part-time Y2)**

Study Hours

Study Hours per 15 credit Module: 150 hours

Lectures and Seminars: 45 hours

Study and Assessment Support: 15 hours

Assessments: 30 hours

Preparation and Independent study: 60 hours

This programme is regulated by the Office for Students under the Quality Assurance Agency framework for UK Higher Education. Where studying may incur additional incidental or optional costs these are listed on the relevant course page on our website. Our Terms and Conditions, Admissions Policy (including baseline English language requirements) can be accessed via the University Studies website at https://www.universitystudies.wsc.ac.uk/policies