Solihull College & University Centre

Stratford-upon-Avon College

Programme Specification

HNC Mechatronics for England

Awarded by

Pearson

Programme Specification

Title of Programme: Higher National Certificate in Leadership and Management for England (HTQ)

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

1. Awarding Body	Pearson
2. Teaching location	Solihull College and University Centre, Blossomfield Campus, Solihull B91 1SB
3. Accreditation details	N/A
4. Final award	Higher National Certificate
5. Name of award	HNC Mechatronics for England (HTQ)
6. Codes	
a. UCAS code	a.
b. Solihull Qualification Code	b.
c. Pearson Programme Code (& approval dates)	c. 610/1260/9 (Sep 2024 – Aug 2029)
7. QAA Subject Benchmark or other external reference such as published by Pearson if the course is a Higher National	Published by Pearson
8. Date this specification applies from	31/03/2025
Approved	Claudine Barnes (Head of HE & Research/Ahmed Hussein (Head of School Engineering)

RECORD OF UPDATES

Date amended*	Nature of amendment**	Reason for amendment**

1. Educational Aims of the Programme

Level 4 Higher National Certificate

The purpose of this qualification is to develop students as professional, self-reflecting individuals able to meet the demands of employers in the engineering sector and to adapt to a constantly changing world. The qualification aims to widen access to higher education and enhance the career prospects of those who undertake them.

The objective of this qualification is to:

● 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, specifically those related to mechatronics

● 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 mechatronics 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

The Level 4 units lay the foundation of learning by providing a broad introduction to mechatronics. This develops and strengthens core skills while preparing students for 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 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 mechatronics 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.

2. Programme structure

The Higher National Certificate in Leadership and Management (HNC) is a Level 4 qualification made up of 120 credits. Students study Part-time over two years. A part-time mode of study

requires students to attend college one day per week to study eight units with the intention to complete the programme in two years.

There are eight modules each worth fifteen credits. Units are designed around the amount of time it will take for a student to complete them and receive a qualification. This is known as the total qualification time (TQT). TQT includes guided learning activities, directed learning activities and assessment. Each 15-credit unit has a TQT of 150 hours – 60 guided learning hours (GLH) and 90 hours of independent learning hours (ILH)

Guided learning hours These are the hours where a tutor is present to give specific guidance towards the learning aim being studied. Guided learning hours include lectures, tutorials and supervised study in, for example, open learning centres and learning workshops. They also include supervised assessment activities such as invigilated exams, observed assessments and observed work-based practice.

The units are:

Unit number	Module Title	Credits	Level
Unit 4001	Engineering Design	15	4
Unit 4002	Engineering Maths	15	4
Unit 4004	Managing a Professional Engineering Project	15	4
Unit 4014	Production Engineering for Manufacture	15	4
Unit 4017	Quality and Process Improvement	15	4
Unit 4063	Engineering Mechanics and Materials	15	4
Unit 4064	Analogue and Digital Electronics	15	4
Unit 4085	Mechatronic Systems in Manufacturing	15	4

Calculation of the final qualification grade

To achieve a Pearson BTEC Level 4 Higher National Certificate qualification, a student must have:
- completed units equivalent to 120 credits at Level 4, and
- achieved at least a Pass in 105 credits at Level 4.

Learners will be awarded a pass, merit or distinction qualification grade by the aggregation of points gained through the successful achievement of individual units. Students must have attempted all units in a valid combination for each qualification. The conditions of award and compensation arrangements will apply as explained above (ie. If one 15-credit unit has been attempted but not achieved, a HNC can still be awarded). If a student has been granted compensation for a unit attempted but not achieved, that unit will appear as unclassified (a ‘U’ grade) on the notification of performance provided with their certificate

Units that have been attempted but not achieved, and subsequently granted compensation, will appear as ‘Unclassified’; i.e. a ‘U’ grade, on the student’s Notification of Performance, that is issued with the student certificate.

Points available per credit at specified unit grades

Points per Credit		
Pass	Merit	Distinction
4	6	8

Qualification grades Pearson BTEC Level 4

Points Range	Grade	
420-599	Pass	P
600-839	Merit	M
840+	Distinction	D

3. Intended Learning Outcomes of the Level 4 Programme

The units studied are:

Unit 4001 Engineering Design

Unit 4002 Engineering Maths

Unit 4004 Managing a Professional Engineering Project

Unit 4014 Production Engineering for Manufacture

Unit 4017 Quality and Process Improvement

Unit 4063 Engineering Mechanics and Materials

Unit 4064 Analogue and Digital Electronics

Unit 4085 Mechatronic Systems in Manufacturing

4. Teaching and Assessment

Teaching methods are varied and informed by contemporary practice in teaching in higher education.

Delivery of all elements of the course use the College Virtual Learning Environment (typically for locating course and module resources, but also for discussion forums, collaborative

information gathering, journal logs and coursework submissions and feedback). This allows for inclusive learning and digital inclusion.

Other teaching methods include seminar discussions or debates, one-to-one or small group tutorials and problem-solving workshops. Reflective learning is encouraged through use of self, peer and staff formative feedback on assignments, group work and project work, and reflective diaries. All these activities develop academic literacy, critical self-awareness, and personal literacy.

The integration of contemporary technologies (digital inclusion) and practical facilities allow Learners to develop their academic and vocational skills to industry standards (employability learning).

Research literacy is taught and practised throughout the course.

Development of active citizenship attributes will form a part of the core ethos of the programme and will be considered in detail in discussions and debates around ethical and welfare topics in today's world. Active citizenship is encouraged and nurtured in the programme through the use in teaching of international textbooks and journals that expose UK students to non-UK perspectives; guest speakers and conferences expose students to diverse cultural perspectives.

Summative assessments for modules are vocationally contextualised. Coursework assignments are diverse and develop research literacy and digital and information literacy. Indicative assignments include essays, work diaries, practical reports, poster presentations and problem-solving exercises. Within some assessments students can tailor their submission to their own vocational area of interest.

Staff ensure that the content of their teaching remains up to date by integrating, where appropriate, the latest research findings in their lectures. In addition, staff undertake annual CPD within the industry to keep abreast with current and contemporary practices.

The programme handbook provides a further commentary for students on Academic literacy, Research literacy, Critical self-awareness and personal literacy, Digital and information literacy, Active citizenship are developed through the programme. In addition, students attend regular tutorials with their academic tutor, which will focus on identifying module content and activities leading to their acquisition of relevant knowledge and skills.

5. Support for Students and Their Learning

Solihull College and University Centre operates a proactive approach to personal tutoring. It recognises that students need to make various adjustments as they move into higher education, whether from school or employment.

Firstly, an induction process is conducted where initial course expectations, rules, and regulations (via handbooks), enrolment and team building activities are undertaken in the week prior to commencing the course. This helps students gain an understanding of what the course involves and allows them to interact with their peers. Late enrollers have a shorter but none the less comprehensive induction.

Secondly, Tutors monitor student progress regularly in 1:1 tutorial to check that they are maximising their potential. Students have access to an academic skills tutor, where they can join group sessions or book one-to-one support with aspects of HE study, such as Harvard referencing or critical thinking. Close links between specific learning difficulty co-ordinators and tutors is used on a regular basis for tracking students with additional learning needs. If students are faced with challenges that affect their ability to study, such as illness, bereavement, depression, financial difficulties, or accommodation issues, we will collaborate with them in finding a way forward.

Thirdly, careers advice (academic and employment) is available through-out the course and within the programme which enables inclusivity as well as employability skills (Curriculum Vitae building, application forms, interview techniques)

There are also support services both that the students will have access to, including learning and personal support services. These range from programme liaison managers, advisers, support co-ordinators, mental health team to specialist subject librarians, career advisers and other learning support staff all designed to ensure that students get the best out of their studies.

6. Assessment Methods

Summative assessment methods include:

- Written work required in various formats such as reports, essays, and blogs.
- Oral presentations to a group audience using teaching aids such as PowerPoint, poster, Electronic Whiteboard, Practical Models.
- Project work.
- Small scale research studies
- Work-based learning.

Assessment is enhanced by encouraging the students to use technology e.g. digital cameras, flip videos, analysis software to augment their presentational work.

As far as possible all assignment work is connected to a vocational relevant scenario. Students receive individual written and oral feedback within 3 weeks of submission date.

Formative assessment for learning and feedback may include:

- Group activities involve students actively contributing to, leading and participating in discussions and debates on a wide range of subject areas, undertaking games or group activities allowing immediate assessment and feedback.
- Subject related tutorials are led by the subject tutor and aim to address a particular module or assignment. These tutorials are linked to workshop sessions where necessary.
- Workshops are for students to develop skills in self-directed study with the support of tutors. These sessions will be supported by staff but not staff led. There will also be self-

directed time for students to further develop these skills and spend time reading around topics using a variety of recommended sources.
- Extension activities/quizzes/Discussion forums on Moodle.
- Presentations are used to support research skills, organisation, time-management skill and are also a confidence-building tool.
- The need for IT support in general will be identified and where necessary, IT support will be organised.
- Diagnostic testing identifying Maths and English support where necessary.

Note:
For further details on assessments, grading criteria, submissions, and resubmissions of assignments, please refer to the BTEC Higher Nationals Centre Guide to Enhanced Quality Assurance and Assessment by BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment (2024-2025)

7. Admission to the Programme

Students must:

- Have a GCSE in Maths and English (grade 4-5 (C) or above) or equivalent at level 2.
- Have a qualification worth 80 UCAS tariff points (e.g. be in possession of an OCR/BTEC National Diploma in Business, T-Level or two A levels) or other equivalent qualifications (you may be assessed at interview).

Mature students with no formal qualifications may be considered if they have excellent communication skills and relevant work experience. This will be subject to a written assessment and interview to assess suitability for the course.

Some candidates are required to attend a personal interview.

Candidates are required to provide a suitable reference.

To encourage widening participation, we will consider offering contextualised admissions to applicants who have experienced barriers to their educational progress. Contextual admissions is a university admissions process that takes into consideration an applicant's individual circumstances and background when reviewing their application, rather than solely focusing on their academic achievements.

8. Programme Resources

- Dedicated Higher Education teaching area.
- Specialist engineering workshop
- Mechatronics workshop
- Electrification workshop
- Advanced Manufacturing Centre

- Materials laboratory
- PLC software
- CAD/CAM software
- Student resource facility for the loan of specialist equipment (e.g. lap top computers)
- Well stocked library with frequent review and update of books.
- E-library resources.
- A wide range of external links with industry for student trips or external specialist speakers

9. Preparation for Employment

Students need both relevant qualifications and employability skills to enhance their career prospects and contribute to their personal development. A range of employability skills are embedded throughout the programme in preparation for employment:

This qualification has been developed by Pearson in conjunction with several stakeholders. Pearson has worked with employers, students, professional bodies, education providers and other experts to design qualifications with the future workforce in mind. Higher National qualifications blend employability skills with academic, business and technical knowledge. They support trainees and apprentices in their Higher Apprenticeships and other technical education programmes, as well as students working towards a degree. Pearson programmes are regularly updated to maintain their high quality and meet the changing needs of the workforce.

Employers contribute to develop of Pearson Higher Nationals in several ways:

- They are involved in every stage of designing the qualifications, from developing the structure and pathways to selecting subjects, developing content and Authorised Assignment Briefs (AABs) and approving qualifications
- They help with delivery of qualifications, for example through vendor accreditation, letters of support and co-badging. Pearson qualifications actively encourage training providers to work with employers. Work placements and work through learning are key features of BTEC Higher Nationals
- They help us review and update our qualifications to meet Occupational Standards and provide supporting material such as case studies to reflect the world of work.

The Solihull College and University Centre commitment to student employability

This programme is part of Solihull College's commitment to meeting the needs of local, national, and international employers by delivering a diverse range of educational models including parttime and work-based study for learners drawn from non-traditional backgrounds in addition to internal progressions from FE vocational programmes.

As part of this commitment, Solihull College and University Centre will:

- Support students by providing professional, impartial advice and guidance to enable students to make considered career decisions before and during their studies to enable them to be prepared for their future employment and development by:

- Identifying the skills needed for progression into employment,
- enhancing their existing employment prospects.
- Provide subject-related resources and information on local, national, and international labour markets.
- Be responsive to the needs of employers to maximise students' employability and career progression prospects.
- Include study skills which will improve students' academic writing and research capabilities to enable further study and facilitate career progression.
- Support equality and diversity, and minimise barriers to learning, as described in the college's Equality Policy which can be found on the website under Mission and Policies.
- Ensure that employers play a key part in module content, course design and assessment criteria by formally seeking their views through employer forums, staff liaison visits, work experience coordinators, meetings with industry groups, and the use of a specialist employer service researcher to help to ensure that the course content meets industry expectations and requirements.

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10.Evaluation of Teaching & Learning

Evaluation of the Standards of Teaching and Learning is undertaken using the results of the following documents.

- Student feedback questionnaires, both initial impressions and the spring survey
- Module review forms completed by students at the end of every module and summarised by the course leader.
- Student input to the Programme Quality Board held twice a year.
- Student representations made through the HE Student Council.
- Action areas fed by the above to the course based Annual Monitoring report.
- Findings of the peer teaching observation scheme and recommendations for improvement that are made.
- External Verifiers report and audit of assessed work.
- Students can submit module evaluation questionnaires which are shared in team meetings and relevant actions raised are included in the Annual Monitoring Review.
- Student Representatives volunteer from each group to bring forward the views of their colleagues informally and within bi-annual programme quality boards (PQB).
- Annual module review in the form of student evaluations which are discussed in a team meeting.
- Periodic programmes review to identify best practice and invite employers to contribute to the design of the programmes.
- Invitation to attend Programme Quality Boards to all students and create a transparent discussion to share ideas, best practice, and areas for improvement.

11. Regulation of Assessment

- The programme is the subject of a Annual Monitoring Review (AMR) the last section of which is a Quality Improvement Plan (QIP), written by the course leader with help and input from the teaching and tutoring team this is passed to the Head of School for audit and from them to the quality unit for further audit and acceptance as part of the College plan.
- Assessment rules and regulations and quality standards are those that are laid down in the Quality standards requirements of the College Academic Board.
- Assessment and assessment vehicles are regulated by the internal verification system for each programme which is itself audited by the quality unit within the College and by the External Verifier appointed by Pearson.
- External verification of assessment and of the provision and standards of teaching are regulated by Pearson and their quality unit, the programme must seek approval for continuance every 5 years. Their requirements are monitored annually by the visit and report of their appointed external verifier (Standards Verifier)
- Also, the programme must comply with the conditions of registration (notably the B conditions surrounding the quality) as set out by the Office for Students (OfS).

Pearson appoints Standards Verifiers (External Examiners).

The role of Standards Verifier is that of moderator. To do this they check and review:

- Action points from previous reports
- Centre assessment policy and boards effectiveness of assignments and internal verification maintenance and audit of assessment records student registration and certification claims
- student support and review
- areas of good practice

Note:
For further details on regulation of assessments, grading criteria, submissions, and resubmissions of assignments, please refer to the BTEC Higher Nationals Centre Guide to Enhanced Quality Assurance and Assessment by clicking online.

12. Progression Opportunities

The Level 4 Higher National Certificate provides a solid grounding in mechatronics on which students can build should they decide to continue their studies beyond the Certificate stage. On successful completion of the Level 4 Higher National Certificate, students can develop their careers in the manufacturing sector through:

- Progressing to the Level 5 Higher National Diploma qualifications in Engineering / Manufacturing
- Entering employment
- Continuing existing employment
- Linking with the appropriate professional body

- Committing to Continuing Professional Development (CPD)
- Progressing to university.

Students should always check the entry requirements for Level 5 and Level 6 programmes at specific further education and higher education providers. The skills offered as part of the Pearson BTEC Higher National Certificate can provide graduates with the opportunity to work in many different areas of engineering.