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| **P****rogramme Specification**  **HND Engineering (Electrical and Electronic Engineering)**  **HND Engineering (Electrical and Electronic Engineering) Top-Up** |

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|  | **Key Dates** | **Date of Production:** | | **Latest Revision Date:** |
| March 2017 | | April 2022 |
|  | **School**  **Department** | | School of Engineering  Construction and Engineering | |
|  | **Awarding Organisation** | | Pearson | |
|  | **Teaching Institution** | | Bradford College | |
|  | **Precise title of the final award** | | Pearson BTEC Level 5 Higher National Diploma in Engineering (Electrical and Electronic Engineering) | |
|  | **Programme title** | | Higher National Diploma in Engineering (Electrical and Electronic Engineering) | |
|  | **Details of Accreditation** | | Pearson/BTEC  Regulated Qualifications Framework (RQF) - September 2017 | |
|  | **FHEQ Level** *(does not apply to HNC)* | | Level 5 | |
|  | **UCAS Code** | | H620 | |
|  | **Mode of Attendance and normal duration of the award** *[full-time or part-time] 1 year/2 years* | | HND full-time - 2 Years  HND Top-Up full-time - 1 Year  HND Top-Up part-time - 1½ Years | |
|  | **Relevant QAA Subject Benchmark Statements** | | Subject benchmark statements (although not specifically applicable to Higher Nationals provision) provide a means for the academic community to describe the nature and characteristics of programmes in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing qualifications should have demonstrated.  The programme learning outcomes mentioned below (section 14) have been informed by the QAA subject benchmark statement for Engineering. | |

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|  | **Criteria for Admission to the Programme** | | For the two-year HND programme, a BTEC Level 3 qualification in Engineering *and* a minimum of 80 UCAS points. GCSE Mathematics and English at Grades A - C or equivalent.  **Or**  A minimum of 80 UCAS points including at least one Level 3 qualification in Maths, Physics or Computer Science. GCSE Mathematics and English at Grades A - C or equivalent.    **Or**  An Access to Higher Education Certificate in an Engineering discipline awarded by an approved further education institution.  The School of Engineering welcomes applications from candidates who do not meet the above criteria. Where this is the case applicants will be invited for interview at which they will be expected to provide a portfolio (either physical or digital) that demonstrates professional industry experience in an engineering discipline and/or can demonstrate a strong interest in engineering through extra-curricular activity, research or work experience. As part of the interview process candidates will undertake an engineering aptitude test along with a numeracy and literacy skills assessment.  Claims for Recognition of Prior Learning (RPL) and Recognition of Prior Experiential Learning (RPEL) are welcomed by the Programme team.  The HND Engineering (Electrical and Electronic Engineering) Top-Up is primarily designed for internal students who wish to progress from the HNC part-time programme. Progression is dependent upon the successful completion of the HNC.  The School of Engineering welcomes applications for direct entry to the HND Top-Up from outside of the College. Candidates must hold an HNC Engineering (Electrical and Electronics Engineering) RQF and will be invited to interview. |
| **13** | **Educational Aims of the Programme**  The Pearson BTEC Level 5 Higher National Diploma in Engineering (Electrical and Electronic Engineering) is designed to provide students with wider knowledge of Engineering principles and methodology, supported by the development of analytical and research skills to prepare students for employment opportunities in the Electrical and Electronic Engineering field or study at HND/degree level. Emphasis will be placed upon reflection, analysis, environmental impact, critical thinking and personal development.  The programme is designed to support career progression for anyone working in Engineering or for individuals who would like to develop their knowledge and skills and pursue a career in this field.  The objectives of the Pearson BTEC Higher Nationals in Engineering are as follows:   * To provide students with the core knowledge, skills and techniques that all engineers require, irrespective of future specialism, to achieve high performance in the Engineering profession. * To build a body of 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. * To 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. * To understand the responsibilities of the engineer within society, and work with integrity, regard for cost, sustainability and the rapid rate of change experienced in world class Engineering. * To provide opportunities for students to enter, or progress in, employment within the Engineering sector, or progress to higher education qualifications such as degrees and honours degree in Engineering or a closely related area, by balancing employability skills with academic attainment. * To provide opportunities for students to make progress towards achieving internationally recognised registration with a Professional Body regulated by the Engineering Council. * To allow flexibility of study and to meet local or specialist needs.   We will meet these objectives by:   * Providing a thorough grounding in Engineering principles at Level 4 that leads the student to a range of specialist progression pathways at Level 5, relating to individual professions within the Engineering sector. * Equipping individuals with the essential qualities of an engineer, including integrity, regard for cost and sustainability, as they apply to a range of roles and responsibilities within the sector. * Enabling progression to a university degree by supporting the development of academic study skills and the selection of appropriate units for study at Level 4 or 5. * Enabling progression to further professional qualifications in specific Engineering disciplines by mapping the units studied to the requirements of the Professional Bodies applicable to that discipline. | | |
| **14** | **Programme Learning Outcomes**  By the end of the programme, students will have developed a deeper understanding of the principles, technical skills and professional skills that are required by the mechanical engineering industry. Students will have the potential to enter the world of work or have the potential to pursue entry onto a degree programme.  The qualification will be awarded to students who have demonstrated: | | |
| **Knowledge and Understanding** | | |
| **KU1** | Knowledge and understanding of the fundamentals principles and practices of the contemporary global engineering industry. | |
| **KU2** | Knowledge and understanding of the external engineering environment and its impact upon local, national and global levels of strategy, behaviour, management and sustainability. | |
|  | **KU3** | Understanding and insight into different engineering practices, their diverse nature, purposes, structures and operations and their influence upon the external environment. | |
|  | **KU4** | A critical understanding of the ethical, environmental, legal, regulatory, professional and operational frameworks within which engineering operates. | |
| **KU5** | A critical understanding of process, practices and techniques for effective management of products, processes, services and people. | |
| **KU6** | A critical understanding of the evolving concepts, theories and models within the study of engineering across the range of operational alternatives. | |
| **KU7** | An ability to evaluate and analyse a range of concepts and theories, models and techniques to make appropriate engineering operational and management decisions. | |
| **KU8** | An appreciation of the concepts and principles of CPD, staff development, team dynamics, leadership and reflective practice as strategies for personal and people development. | |
|  | **KU9** | Knowledge and understanding of how the key areas of engineering and the environment it operates within influence the development of people and businesses. | |
|  | **KU10** | An understanding of the skills, techniques and methodologies used to resolve problems in the workplace. | |
|  | **KU11** | Knowledge and understanding of the human-machine interaction to inform the development of good design and fitness for purpose. | |
|  | **KU12** | An ability to deploy processes, principles, theories, skills and techniques to analyse, specify, build and evaluate processes and outcomes. | |
|  | **Cognitive Skills** | | |
|  | **CS1** | Apply knowledge and understanding of the concepts, principles and models within the contemporary global engineering industry. | |
|  | **CS2** | Develop different strategies and methods to show how resources (human, financial, environmental and information) are integrated and effectively managed to successfully meet objectives. | |
|  | **CS3** | Critically evaluate current principles and operational practices used within the engineering industry as applied to problem-solving. | |
|  | **CS4** | Apply project management skills and techniques for reporting, planning, control and problem-solving. | |
|  | **CS5** | Recognise and critically evaluate the professional, economic, social, environmental and ethical issues that influence the sustainable exploitation of people, resources and businesses. | |
|  | **CS6** | Critique a range of engineering information technology systems and operations and their application to maximise and successfully meet strategic objectives. | |
|  | **CS7** | Interpret, analyse and evaluate a range of engineering data, sources and information to inform evidence-based decision-making. | |
|  | **CS8** | Synthesise knowledge and critically evaluate strategies and plans to understand the relationship between theory and actual world engineering situations. | |
|  | **CS9** | Evaluate the changing needs of the engineering industry and have the confidence to self-evaluate and undertake additional CPD as necessary. | |
|  | **Applied Skills** | | |
|  | **AS1** | Evidence the ability to show customer relationship management skills and develop appropriate policies and strategies to meet stakeholder expectations. | |
|  | **AS2** | Apply innovative engineering ideas to design and develop new products or services that respond to the changing nature of the engineering industry and the global market. | |
|  | **AS3** | Integrate theory and practice through the investigation, evaluation and development of practices and products in the workplace. | |
|  | **AS4** | Develop outcomes for customers using appropriate practices and data to make justified recommendations. | |
|  | **Transferable Skills** | | |
|  | **TS1** | Develop a skill-set to enable the evaluation of appropriate actions taken for problem-solving in specific engineering contexts | |
|  | **TS2** | Develop self-reflection, including self-awareness, to become an effective self-managing student, appreciating the value and importance of the self-reflection process. | |
|  | **TS3** | Undertake independent learning to expand on own skills and delivered content. | |
|  | **TS4** | Competently use digital literacy to access a broad range of research sources, data and information. | |
|  | **TS5** | Communicate confidently and effectively, both orally and in writing both internally and externally with engineering professionals and other stakeholders. | |
| **TS6** | Demonstrate strong interpersonal skills, including effective listening and oral communication skills, as well as the associated ability to persuade, present, pitch and negotiate. | |
| **TS7** | Identify personal and professional goals for continuing professional development in order to enhance competence to practice within a chosen engineering field. | |
| **TS8** | Take advantage of available pathways for continuing professional development through Higher Education and Professional Body Qualifications. | |
| **TS9** | Develop a range of skills to ensure effective team working, project and time management, independent initiatives, organisational competence and problem-solving strategies. | |
| **TS10** | Reflect adaptability and flexibility in approach to engineering; showing resilience under pressure and meeting challenging targets within given deadlines. | |
| **TS11** | Use quantitative skills to manipulate data, evaluate and verify existing theory. | |
| **TS12** | Develop emotional intelligence and sensitivity to diversity in relation to people, cultures and environments. | |
|  | **TS13** | Show awareness of current developments within the engineering industry and their impact on employability and CPD. | |

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| **15** | **Key Learning & Teaching Strategy Methods**  The learning and teaching strategy for the HND Engineering (Electrical and Electronic Engineering) is explicitly designed to contribute to the achievement of the intended learning outcomes which are clearly expressed at programme and unit level.   |  |  | | --- | --- | | Lectures and Seminars | Along with workshops these are the most common techniques used by lecturers in the School of Engineering. They offer an opportunity to engage with the full cohort of students, where the focus is on sharing knowledge through the use of presentations. Unit tutors have extensive subject specialist knowledge and experience which is embedded into lectures and seminars to ensure that the students have up to date and industry specific knowledge. | | Workshops and Labs | These are used to build on knowledge shared via tutors and seminars. They allow the student to experience first-hand the range of specialist software, hardware and equipment used in the engineering industry. 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. Workshops are timetabled for each unit to ensure that students are able to stretch their learning and seek additional support from teaching staff. The balance between lectures, seminars and workshops is dictated by the learning outcomes for each unit. | | Tutorials | These provide an opportunity for focused one-to-one support, where teaching is led by an individual student’s requirements. These can be most effective in the run up to assessment, where tutors can provide more focused direction, perhaps based on a formative assessment. Students will have a structured tutorial programme and have the option to request additional tutorials if required. All students will participate in an extensive induction which will commence at the start of the programme and continue throughout their studies. This will include re-visiting and developing academic skills including academic writing, research and referencing, alongside developing key soft skills. | | Virtual Learning Environments (VLEs) Moodle | These are invaluable to students studying on a face-to-face programme. Used effectively, VLEs not only provide a repository for taught material such as presentation slides or handouts, but could be used to set formative tasks such as quizzes. Further reading is located on the VLE, along with a copy of the programme documents, such as the handbook and assessment timetable. The subject specialist librarian regularly accesses and updates programme and Moodle pages to ensure that the most relevant and up to date journals and e-books are linked and students have access to them. Tutors provide a wide range of resources on Moodle including further reading, videos, flipped learning tasks and links to essential sources. | | Work Based Learning | The School of Engineering works closely with a number of industry partners to ensure that academic content is closely linked to the world of work. This adds realism and provides students with an opportunity to link theory to practice. Many of the students are already employed in the engineering industry and this provides an opportunity to share industry practice with those students progressing from Level 3.  As far as possible, each student will undertake a ‘live’ project as part of the programme. The specification for this will be agreed with an industry partner or employer who may also provide mentoring, site visits, support and advice during the development stage. The School of Engineering record student presentations of their project work and these are made available to Level 4 students, employers, stakeholders and external examiners. This provides valuable feedback for students as well as providing a further opportunity to engage with the wider engineering community.  Although work placements are not mandatory on the programme, Beacon recruitment will be present in the induction to discuss the options for work placements. Students who are not work based will be encouraged to undertake industry work placements throughout their programme to enrich the skills and knowledge gained and to develop contacts in the engineering industry. Students will also be encouraged to register with Beacon recruitment to gain part-time employment whilst studying. | | Guest Speakers | The School of Engineering hold an annual Student Conference. This features talks from alumni who are now working successfully in industry. The conference also features talks from final year students who, through sharing their experience, provide inspiration and focus for our Level 4 and 5 students.  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. | | Field Trips | Effectively planned field trips, which have a direct relevance to the syllabus, add value to the learning experience. The School of Engineering plans a range of visits to conferences, seminars and events during the academic year. These include visits to:   * Doncaster Cable - Manufacturers of Electrical Cabling * Siemens, Leeds * Drax Power Station   Through these trips students relate theory to practice, have an opportunity to experience organisations in action and, potentially, open their minds to career routes. |   The programme will produce students who possess a rounded knowledge and understanding of Engineering principles and have the skills to analyse complex problems appropriate to Engineering. The learning and teaching strategy is designed to supplement the students’ existing knowledge and to encourage their acquisition of new subject knowledge while supporting them in the move towards a greater degree of independence and self-direction. It has been informed by the College’s HE Learning, Teaching and Assessment Strategy.  All students have access to College library/learning centre resources including Maths and English Language workshops.  Through lectures, students are encouraged to develop the understanding of the concepts, theories and principles prior to application. Students will develop skills in listening and selective note taking and appreciate how information is structured and presented. |
| **16** | **Key Assessment Strategy/Methods**  The programme assessment strategy was developed with reference to the College HE Learning, Teaching and Assessment Strategy. The assessment process for the HNC/D Engineering programmes reflects both the aims and learning objectives of the programme and establishes clear links with the underlying philosophy of the learning and teaching strategy. This requires the use of a wide range of assessment methods involving an appropriate balance between formative and summative methods.  Formative assessment is primarily developmental in nature and designed to give feedback to students on their performance and progress. Assessment designed formatively should develop and consolidate knowledge, understanding, skills and competencies. It is a key part of the learning process and can enhance learning and contribute to raising standards. Through formative assessment tutors can identify students’ differing learning needs early on in the programme and so make timely corrective interventions. Tutors can also reflect on the results of formative assessment to measure how effective the planned teaching and learning is at delivering the syllabus. Each student should receive one set of written formative feedback. This type of formative assessment encourages reflective practice, develops academic and personal skills and builds student confidence. Formative assessment is in evidence in all units throughout the programme.  Summative assessment is where students are provided with the assignment grades contributing towards the overall unit grade. For summative assessment to be effective it should also give students additional formative feedback to support ongoing development and improvement in subsequent assignments. All formative assessment feeds directly into the summative assessment for each unit and lays the foundations from which students develop the necessary knowledge and skills required for the summative assessment.  Each unit has a set of assessment criteria which the student must demonstrate to achieve a pass grade. Students will undertake one or more pieces of assessment for each unit and will need to show the assessment criteria for the unit have been met. Some of the assessments have elements of negotiation where the student can make decisions and agree with the tutor what will be undertaken for assessment. This ensures that the work has personal and professional relevance.  Underpinning assessment are the following principles:   * Assessment is valid - in that it tests an appropriate skill or ability; * Assessment is reliable - in that the same result would be achieved if repeated; * Assessment is relevant - in that it is set in the context of the practices and needs of industry; * Assessment forms part of a student’s learning - in that assessment is not seen as simply a measurement tool but as a key part of the learning process and, through formative feedback, a means of supporting progression.   For each year of study, the programme team will monitor summative assessment requirements across units in order to, where possible, smooth student workload.  Each unit in the programme has a set of assessment criteria which the student must demonstrate to pass the unit. Students will undertake one or more pieces of assessment for each unit and will need to show the assessment criteria for the unit have been met. Some of the assessments have elements of negotiation where the student can make decisions and agree with the tutor what will be undertaken for assessment. This ensures that the work has personal and professional relevance.  Assessments may include elements of:   * practical assessments * portfolios of evidence * ‘in class’ tests * lab work * case studies * examinations, both open and closed book * reflective activities where you look back over your experiences, analyse them with the assistance of relevant theory and reflective tools, and learn from the experience; * online discussions that you have had with your peers, tutors and invited contributors to the programme; * oral and written reports; * journals, blogs and log books; * plans (e.g., action plans, plans for your group activities); * presentations   All written work related to assessments will be submitted via Turnitin to ensure authentication of students’ work. |

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| **17** | **Programme Units** | | | | | | |
| **Stage 1 (total 120 credits)** | | | | | | |
| **Unit number** | **Pearson Code** | **Title** | **Credits** | **Level** | **Mandatory Core or Centre Selected Specialist Unit** |
| 1 | K/615/1475 | Engineering Design | 15 | 4 | Mandatory Core |
| 2 | M/615/1476 | Engineering Maths | 15 | 4 | Mandatory Core |
| 3 | T/615/1477 | Engineering Science | 15 | 4 | Mandatory Core |
| 4 | A/615/1478 | Managing a Professional Engineering Project | 15 | 4 | Mandatory Core |
| 13 | D/615/1487 | Fundamentals of Thermodynamics and Heat Engines | 15 | 4 | Centre Selected Specialist Unit |
| 17 | H/615/1491 | Quality and Process Improvement | 15 | 4 | Centre Selected Specialist Unit |
| 19 | M/615/1493 | Electrical and Electronic Principles | 15 | 4 | Mandatory Specialist Unit |
| 22 | A/615/1500 | Electronic Circuits and Devices | 15 | 4 | Centre Selected Specialist Unit |

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|  | **Programme Units** | | | | | |
| **Stage 2/Top-Up (total 120 credits)** | | | | | |
| **Unit number** | **Pearson Code** | **Title** | **Credits** | **Level** | **Mandatory Core or Centre Selected Specialist Unit** |
| 34 | J/615/1502 | Research Project | 30 | 5 | Mandatory Core |
| 35 | L/615/1503 | Professional Engineering Management | 15 | 5 | Mandatory Core |
| 37 | Y/615/1505 | Virtual Engineering | 15 | 5 | Centre Selected Specialist Unit |
| 39 | H/615/1507 | Further Mathematics | 15 | 5 | Mandatory Specialist Unit |
| 44 | M/615/1512 | Industrial Power, Electronics and Storage | 15 | 5 | Mandatory Specialist Unit |
| 45 | T/615/1513 | Industrial Systems | 15 | 5 | Mandatory Specialist Unit |
| 51 | Y/615/1519 | Sustainability | 15 | 5 | Centre Selected Specialist Unit |

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| **18** | **Programme Structure**  The full-time HND Engineering (Electrical and Electronic Engineering) programme will be delivered over two years - all 8 units of Year/stage 1 will be delivered on two full days in semester 1 and one full day in semester 2. The 7 units of Year/stage 2 will be delivered on one full day in semester 1 and two full days in semester 2.  The part-time HND Engineering (Electrical and Electronic Engineering) Top-Up structure contains six semesterised units and one year-long unit delivered over three semesters. In the first year of the programme, students will take two units which are taught in semester 2 (directly following completion of the HNC). In the second year of the programme, students will take four semesterised units and one year-long unit. This structure meets the needs of local industry by providing a 3 year, part-time HND qualification.  The full-time HND Engineering (Electrical and Electronic Engineering) Top-Up structure will deliver six semesterised units and one year-long unit. Delivery will take place over one full-day in semester 1 and two full days in semester 2.  The units are sequenced to provide students with a coherent learning experience which will satisfy the programme aims and outcomes and enhance student retention. The structure will also ensure a practicable, even spread of student assessments throughout the academic year.  The units on this programme have been designed from a learning time perspective. For example, a 15-credit point unit is equivalent to approximately 150 learning hours, of which 60 hours will be guided learning hours (i.e. when your tutor is present in a lecture or workshop).  The HND Top-Up programme has a total value of 120 credits and is equivalent to approximately 1200 hours total learning time (TLT). Within this learning time - which is time taken by students to complete the learning outcomes of each unit determined by the assessment criteria - there are Guided Learning Hours (GLHs). These are defined as time when your tutor is present and giving specific guidance (e.g.: lectures, tutorials, workshops). On this programme, there are approximately 480 GLHs. **HND Engineering (Electrical and Electronic Engineering) - Full-Time**  |  |  | | --- | --- | | **Full-time - Year 1** | | | **Semester 1** | **Semester 2** | | Unit 2: Engineering Maths | Unit 1: Engineering Design | | Unit 3: Engineering Science | Unit 22: Electronic Circuits and Devices | | Unit 13: Fundamentals of Thermodynamics and Heat Engines |  | | Unit 17: Quality and Process Improvement |  | | Unit 19: Electrical and Electronic Principles |  | | Unit 4: Managing a Professional Engineering Project | |  |  |  | | --- | --- | | **Full-time - Year 2** | | | **Semester 1** | **Semester 2** | | Unit 37: Virtual Engineering | Unit 35: Professional Engineering Management | | Unit 39: Further Mathematics | Unit 44: Industrial Power, Electronics  and Storage | |  | Unit 45: Industrial Systems | |  | Unit 51: Sustainability | | Unit 34: Research Project | |  **HND Engineering (Electrical and Electronic Engineering) Top-Up - Part-Time**  |  |  | | --- | --- | | **Part-time Top-Up - Year 1** | | | **Semester 1** | **Semester 2** | |  | Unit 44: Industrial Power, Electronics  and Storage | |  | Unit 51: Sustainability |  |  |  | | --- | --- | | **Part-time Top-Up - Year 2** | | | **Semester 1** | **Semester 2** | | Unit 37: Virtual Engineering | Unit 35: Professional Engineering Management | | Unit 39: Further Mathematics | Unit 45: Industrial Systems | | Unit 34: Research Project | |  **HND Engineering (Electrical and Electronic Engineering) Top-Up - Full-Time**  |  |  | | --- | --- | | **Full-time Top-Up - Year 1** | | | **Semester 1** | **Semester 2** | | Unit 37: Virtual Engineering | Unit 35: Professional Engineering Management | | Unit 39: Further Mathematics | Unit 44: Industrial Power, Electronics  and Storage | |  | Unit 45: Industrial Systems | |  | Unit 51: Sustainability | | Unit 34: Research Project | | |
| **19** | **Support for Students and Their Learning**  Student progression on the programme is supported by subject tutors and central College services.  College  The College employs dedicated staff to offer specialist advice and assistance for all students:  Bradford Student Health Service is a dedicated NHS GP service specialising in Student Health. The Student Health Service provides a confidential and comprehensive service of health care with access to specialist services. Students who live in the practice area can register with one of the doctors and make full use of the service.  Additional Learning Support (Disabilities and Difficulties) look after the learning support needs of all students with disabilities or difficulties in College, irrespective of their programme of study. They provide support and guidance for students whilst developing close links with programme tutors to ensure that the support put in place is appropriate to the students’ individual needs and the requirements of the programme.  Library resources are available on the second floor of the David Hockney Building with library staff available to give assistance if required.  Technology and Media Services are also located on the second floor of the David Hockney Building. Various pieces of IT equipment can be accessed to enhance the learning experience.  There are also other areas of personal interest to students, for example, the gym in the Trinity Green Building.  Programme   * The programme is managed by a Programme Leader who will aim to ensure that the student meets the programme learning outcomes alongside the awarding body expectations for quality. * Teaching is delivered by an experienced team of lecturers each of whom has expertise in a range of specialist subjects. * Induction week comprises of a full programme of events designed to welcome students to the College, and make them familiar with their new surroundings. The process of establishing effective relationships between students and the teaching team begins at this point and activities are geared towards establishing and promoting a cohort identity. All students are provided with a Student and Programme Handbook and supported in gaining access to on-line resources. * Extensive use is made of a VLE. This has comprehensive support material at programme and unit level as well as additional learning resources and links to off-site study support. Independent learning is encouraged through the use of student forums, blogs and message boards. These are also used to provide students with regular and timely formative feedback. * At the start of each academic year all students undertake a numeracy and literacy skills test. The results of these are analysed and allow for student specific additional support to be offered where required. * Throughout the academic year all students have timetabled study skills sessions. These sessions support students with the transition to Level 4 and Level 5 study, prepare them for progression to Level 6 and enable them to align practical skills with the academic rigour associated with Higher Education. * The School of Engineering is equipped with hardware, software and equipment that reflects the standards required by industry. Specialist software is provided. Hardware, Software and equipment requirements are reviewed annually. * A tutorial system is in place that provides academic and pastoral support to all students. Staff are available on both a walk-in and by-appointment basis. Staff are also contactable via email and the VLE. * A Personal Tutor is assigned to each student to provide pastoral care and an opportunity to discuss any issues that may arise throughout the academic year. * The College have extensive library facilities including a wide range of on-line resources. Library resources are reviewed by the Programme Area on an annual basis. Group study areas are available within the College library.   The Teaching Team operates a series of additional workshops throughout the academic year. A specialist tutor is available at each of these to offer support and guidance to students. |
| **20** | **Distinctive Features**  The HNC/D in Engineering are work-related qualifications for students taking their first steps into employment, or for those already in employment and seeking career development opportunities. The programmes provide progression into the workplace either directly or via study at Level 5 and 6 and are also designed to meet employer’s needs. Pearson BTEC Higher National qualifications are widely recognised by industry as the principal vocational qualification at Levels 4 and 5. When redeveloping the programme, Pearson collaborated with a wide range of students, employers, higher education providers, colleges and subject experts to ensure that the new qualifications meet their needs and expectations. They also worked closely with the relevant professional bodies, to ensure alignment with recognised professional standards. There is now a greater emphasis on employer engagement and work readiness. The new Pearson BTEC Higher National qualifications in Engineering are designed to reflect this increasing need for high quality professional and technical education pathways at Levels 4 and 5, thereby providing students with a clear line of sight to employment and to progression to a degree at Level 6.  The School of Engineering has established close links with both local business and the local community. Wherever practicable, assessment on the programme reinforces these links. |
| **21** | **Regulation of Assessment**  Assessment regulations are as published by the College and are in accordance with guidance provided by Pearson/BTEC. Regulations relevant to this programme of study are published in the programme handbook. |
| **22** | **Indicators of Quality and Standards**  Annual review and monitoring will be conducted in line with College regulations and Pearson requirements using College and awarding body processes. The full cycle of review will take place and is identified in the HE Quality calendar. This cycle includes unit review/evaluation by students and staff and Student Experience Surveys (SES).  Measures are in place to ensure robust internal and external quality assurance. These quality-related processes are outlined below:  Programme committee meetings and annual monitoring events which are attended by student representatives.  Unit reviews which are completed by students/staff.  Moodle will also host chatrooms and forums so that students can liaise regularly with one another as well as tutors.  The delivery of the HND Engineering (Electrical and Electronic Engineering) will be reviewed annually via production of an Annual Monitoring Report and, on a much more regular basis, through meetings of the programme delivery team.  The programme will also be subject to external quality assurance processes such as external examiner review. |
| **23** | **The Role of the Awarding Body**  As the awarding body, Pearson provides a programme of BTEC Higher Nationals offering specialist vocational study at Levels 4 and 5 which reflects the requirement of professional organisations and meets the National Occupational Standards for each sector or industry.  BTEC Higher Nationals are directly available from Pearson as RQF qualifications. To offer BTEC Higher Nationals, colleges must have both Centre and Qualification Approval.  Pearson operates a quality assurance system for all BTEC Higher National programmes which ensures that centres have effective quality assurance processes to review programme delivery and that the outcomes of assessment are to national standards. |
| **24** | **External Examination**  Pearson assures itself of the standard of provision offered at the College through a series of quality assurance activities, including external examining.  An independent academic, appointed by Pearson/BTEC, visits the College and assures themselves and Pearson/BTEC (via an annual report) of the quality of facilities, academic delivery and student achievement against described standards. |

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| **M****ap of Outcomes to Units** |

|  | **Knowledge and Understanding** | | | | | | | | | | | **Cognitive Skills** | | | | | | | | | **Applied Skills** | | | | **Transferable Skills** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | KU1 | KU2 | KU3 | KU4 | KU5 | KU6 | KU7 | KU8 | KU9 | KU  10 | KU  11 | CS1 | CS2 | CS3 | CS4 | CS5 | CS6 | CS7 | CS8 | CS9 | AS1 | AS2 | AS3 | AS4 | TS1 | TS2 | TS3 | TS4 | TS5 | TS6 | TS7 | TS8 | TS9 | TS10 | TS11 | TS12 |
| L4 Unit 1  Engineering Design | **X** |  |  | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** |
| L4 Unit 2  Engineering Maths | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |  |  | **X** |  | **X** |  |  | **X** |  |  |  |  |  |  |  |  |
| L4 Unit 3  Engineering Science | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |  |  | **X** |  | **X** |  |  | **X** |  |  |  |  |  |  |  |  |
| L4 Unit 4  Managing a Professional Engineering Project | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  |  |  |  |  |  |  |  |  |  | **X** | **X** |  | **X** |  | **X** |  |  |  | **X** | **X** | **X** | **X** | **X** | **X** |
| L4 Unit 13:  Fundamentals of Thermodynamics and Heat Engines | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  |  |  |  |  |  |  |  | **X** | **X** |  |  |  | **X** |  |  | **X** |  |  |  |  |  |  | **X** |  | **X** | **X** | **X** |
| L4 Unit 17  Quality and Process Improvement | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  | **X** |  | **X** |  |  |  |  | **X** |  |  |  |
| L4 Unit 19  Electrical and Electronic Principles | **X** | **X** | **X** |  | **X** | **X** | **X** |  | **X** | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  | **X** |  | **X** |  | **X** |
| L4 Unit 22  Electronic Circuits and Devices | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |

|  | **Knowledge and Understanding** | | | | | | | | | | | **Cognitive Skills** | | | | | | | | | **Applied Skills** | | | | **Transferable Skills** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| L5 Unit 34  Research Project | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |  | **X** |
| L5 Unit 35  Professional Engineering Management | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** |  | **X** |  | **X** | **X** | **X** | **X** | **X** | **X** |
| L5 Unit 37  Virtual Engineering | **X** |  |  |  |  |  | **X** |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  | **X** |
| L5 Unit 39  Further Mathematics | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |  |  | **X** |  | **X** |  |  | **X** |  |  |  |  |  | **X** |  |  |
| L5 Unit 44  Industrial Power, Electronics and Storage | **X** |  |  |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  | **X** | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |
| L5 Unit 45  Industrial Systems | **X** |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |
| L5 Unit 51  Sustainability | **X** | **X** | **X** |  | **X** | **X** | **X** |  |  |  |  |  | **X** |  | **X** | **X** |  |  | **X** |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  | **X** |