

<b>Programme Specification</b> <b>HND Computing (Intelligent Systems)</b>
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<b>1</b>	<b>Key Dates</b>	<b>Date of Production:</b>	<b>Latest Revision Date:</b>
		March 2017	May 2017
<b>2</b>	<b>School</b>	Computing	
	<b>Faculty</b>	Faculty of Applied Science	
<b>3</b>	<b>Awarding Organisation</b>	Pearson	
<b>4</b>	<b>Teaching Institution</b>	Bradford College	
<b>5</b>	<b>Precise title of the final award</b>	Pearson BTEC Level 5 Higher National Diploma in Computing (Intelligent Systems)	
<b>6</b>	<b>Programme title</b>	Higher National Diploma in Computing (Intelligent Systems)	
<b>7</b>	<b>Details of Accreditation</b>	Pearson/BTEC Regulated Qualifications Framework (RQF) - September 2017	
<b>8</b>	<b>FHEQ Level</b> <i>(does not apply to HNC)</i>	Level 5	
<b>9</b>	<b>UCAS Code</b>	104G	
<b>10</b>	<b>Mode of Attendance and normal duration of the award</b> <i>[full-time or part-time] 1 year/2 years</i>	Full-time: 2 Years Part-time: 4 Years	
<b>11</b>	<b>Relevant QAA Subject Benchmark Statements</b>	<p>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.</p> <p>The programme has been informed by the QAA subject benchmark statement for Computing (February 2016).</p>	

<p><b>12</b></p>	<p><b>Criteria for Admission to the Programme</b></p>	<p>80 UCAS tariff points with a minimum of three GCSEs at Grade C/4-5 or above and including Mathematics and English. Applicants who do not meet the criteria for Mathematics and English will be considered and will be invited for interview where they will sit a numeracy and literacy skills assessment.</p> <p>The School of Computing 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:</p> <p>Demonstrates professional industry experience in a Computing discipline</p> <p>or</p> <p>Provides examples of computer skills appropriate to Level 4 study. Examples could include:</p> <ul style="list-style-type: none"> <li>⑩ Digital media</li> <li>⑩ Web site development</li> <li>⑩ App development and programming skills</li> <li>⑩ Network design</li> <li>⑩ Hardware maintenance</li> </ul> <p>Candidates will also be required to undertake literacy and numeracy skills assessment along with a programming aptitude test.</p>
<p><b>13</b></p>	<p><b>Educational Aims of the Programme</b></p>	<p>The Pearson BTEC Level 5 Higher National Diploma in Computing offers students six specialist pathways designed to support progression into relevant occupational areas or on to degree-level study. These pathways are linked to Professional Body standards and vendor accredited certification (where appropriate) and can provide professional status and progression to direct employment.</p> <p>At Level 4 students develop a broad knowledge and awareness of key aspects of the computing sector through six core units. At Level 5 students will specialise in a chosen pathway.</p> <p>Holders of the Pearson BTEC Higher National Diploma will have developed a sound understanding of the principles in their field of study and will have learned to apply those principles more widely. They will have learned to evaluate the appropriateness of different approaches to solving problems. They will be able to perform effectively in their chosen field and will have the qualities necessary for employment in situations requiring the exercise of</p>

personal responsibility and decision-making.

Throughout the programme emphasis will be placed upon reflection, analysis, environmental impact, critical thinking and personal development.

The objectives of the Pearson BTEC Higher Nationals in Computing are as follows:

- To equip students with computing skills, knowledge and the understanding necessary to achieve high performance in the global computing environment.
- To provide education and training for a range of careers in computing, including network engineering, software engineering, data analytics, security, intelligent systems, and applications development.
- To provide insight and understanding into international computing operations and the opportunities and challenges presented by a globalised market place.
- To equip students with knowledge and understanding of culturally diverse organisations, cross-cultural issues, diversity and values.
- To provide opportunities for students to enter or progress in employment in computing, or progress to higher education qualifications such as an Honours degree in computing or a related area.
- To provide opportunities for students to develop the skills, techniques and personal attributes essential for successful working lives.
- To provide opportunities for those students with a global outlook to aspire to international career pathways.
- To provide opportunities for students to achieve a nationally recognised professional qualification.
- To provide opportunities for students to achieve vendor accredited certifications.
- To offer students the chance of career progression in their chosen field.
- To allow flexibility of study and to meet local or specialist needs.
- To offer a balance between employability skills and the knowledge essential for students with entrepreneurial, employment or academic aspirations.

We will meet these objectives by:

- Providing a thorough grounding in computing principles at Level 4 that leads the student to a range of specialist progression pathways at Level 5 relating to individual professions within the computing sector.
- Enabling progression to a university degree by supporting the development of appropriate academic study skills.
- Enabling progression to further professional qualifications in specific computing areas by mapping to units in a range of vendor accredited certificates.

<b>14</b>	<p><b>Programme Learning Outcomes</b></p> <p>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 computing industry. Students will have the potential to enter the world of work or have the potential to pursue entry onto a Level 6 programme.</p> <p>On successful completion of the programme, students will be able to:</p>
<b>Knowledge and Understanding</b>	
<b>KU1</b>	Knowledge and understanding of the fundamental principles and practices of the contemporary global computing environment.
<b>KU2</b>	Understanding and insight into different organisations, their diverse nature, purposes, structures and operations and their influence upon the external environment.
<b>KU3</b>	A critical understanding of the evolving concepts, theories and models within the study of computing across a range of practical and hypothetical scenarios.
<b>KU4</b>	An ability to evaluate and analyse a range of concepts, theories and models to make appropriate decisions.
<b>KU5</b>	An appreciation of the concepts and principles of CPD, staff development, leadership and reflective practice as methods and strategies for personal and people development.
<b>KU6</b>	Knowledge and understanding of vital concepts, principles and theories relating to computing and computer applications, software development, networking and media systems.
<b>KU7</b>	Critical understanding of how computer-based technologies interrelate and communicate with one another, support processes and lead to a computerised solution to a problem.
<b>KU8</b>	Understanding of the application of appropriate mathematical techniques in the design and development of software and computer systems.
<b>KU9</b>	Critical understanding of the use of industry standard technical documentation and practices.
<b>KU10</b>	Develop a range of multi-disciplined programming and coding skills.
<b>KU11</b>	Deploy appropriate tools, theories, principles and methodologies to analyse, specify, construct, test and evaluate a computer based system in an appropriate context.
<b>KU12</b>	An ability to apply industry-standard methods in human-computer interaction to inform the development of usable interfaces.
<b>KU13</b>	An understanding of the appropriate techniques and methodologies used to resolve real-life problems in the workplace.
<b>Cognitive Skills</b>	
<b>CS1</b>	Deploy appropriate theory, practices and tools in order to analyse, specify, design and implement computing systems and software applications.
<b>CS2</b>	Recognise and critically evaluate the professional, economic, social, environmental, moral and ethical issues that influence the sustainable exploitation of computer-based technologies.
<b>CS3</b>	Critique a range of systems and operations and their application to maximise and successfully meet strategic objectives.
<b>CS4</b>	Interpret, analyse and evaluate a range of data, sources and information to inform evidence-based decision making.

<b>CS5</b>	Synthesise knowledge and critically evaluate strategies and plans to understand the relationship between theory and real-world scenarios.
<b>CS6</b>	Evaluate the changing needs of the business environment and have confidence to self-evaluate and undertake additional CPD as necessary.
<b>Applied Skills</b>	
<b>AS1</b>	Evidence the ability to show client relationship management and develop appropriate policies and strategies to meet stakeholder expectations.
<b>AS2</b>	Apply innovative ideas to develop and create new systems or services that respond to the changing nature of organisations.
<b>AS3</b>	Integrate theory and practice through the investigation and examination of practices in the workplace.
<b>AS4</b>	Develop outcomes for clients using appropriate practices and data to make justified recommendations.
<b>AS5</b>	Apply IT concepts and principles to critically evaluate and analyse complex practical problems and provide IT-based solutions.
<b>AS6</b>	Effectively apply appropriate computer based technologies to analyse, develop and maintain reliable software.
<b>AS7</b>	Employ a range of analytical techniques and design tools in the development of secure software.
<b>AS8</b>	Locate, receive and respond to a variety of information sources (e.g. textual, numerical, graphical and computer-based) in defined contexts.
<b>Transferable Skills</b>	
<b>TS1</b>	Develop a skill set to enable the evaluation of appropriate actions taken for solving problems in a specific organisational context.
<b>TS2</b>	Self-reflection, including self-awareness; the ability to become an effective self-student and appreciate the value of the self-reflection process.
<b>TS3</b>	Undertake independent learning to expand on own skills and delivered content.
<b>TS4</b>	Competently use digital literacy to access a broad range of research sources, data and information.
<b>TS5</b>	Communicate confidently and effectively, both orally and in writing, both internally and externally with organisations and other stakeholders.
<b>TS6</b>	Communicate ideas and arguments in an innovative manner using a range of digital media.
<b>TS7</b>	Communicate effectively, verbally and in writing and articulate well defined issues, for a variety of purposes, taking into account the audience viewpoint.
<b>TS8</b>	Demonstrate strong interpersonal skills, including effective listening and oral communication skills, as well as the associated ability to persuade, present, pitch and negotiate.
<b>TS9</b>	Identify personal and professional goals for continuing professional development in order to enhance competence to practise within a chosen computing field.
<b>TS10</b>	Take advantage of available pathways for continuing professional development through higher education, Professional Body Qualifications and Vendor Accredited Certifications.
<b>TS11</b>	Develop a range of skills to ensure effective team working, independent initiatives, organisational competence and problem-solving strategies.

<b>TS12</b>	Show an ability to work as a member of a development team, recognising the different roles within a team and the different ways of organising teams.
<b>TS13</b>	Reflect adaptability and flexibility in approach to work; showing resilience under pressure and meeting challenging targets within given deadlines.
<b>TS14</b>	Use quantitative skills to manipulate data, evaluate and verify existing theory.
<b>TS15</b>	Show awareness of current developments within the computing industry and their impact on employability and CPD.
<b>TS16</b>	Manage small to medium scale projects using appropriate planning and time management techniques.
<b>TS17</b>	Display emotional intelligence and sensitivity to diversity in relation to people and cultures.

15	<b>Key Learning &amp; Teaching Strategy Methods</b>	
<p>The learning and teaching strategy for the HND Computing (Intelligent Systems) is explicitly designed to contribute to the achievement of the intended learning outcomes which are clearly expressed at programme and unit level.</p>		
Lectures and Seminars	<p>Along with workshops, these are the most common techniques used by lecturers in the School of Computing. 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.</p>	
Workshops and Labs	<p>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 and hardware used in 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.</p>	
Tutorials	<p>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.</p>	
Virtual Learning Environments (VLEs) Moodle	<p>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 course 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.</p>	

	<p>Tutors provide a wide range of resources on Moodle including further reading, videos, flipped learning tasks and links to essential sources.</p>
<p>Work Based Learning</p>	<p>The School of Computing 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.</p> <p>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 who may also provide mentoring, site visits, support and advice during the development stage. Each academic year the School of Computing holds a Project Open Day which is attended by local employees, College stakeholders, academic and support staff. This provides valuable feedback for students as well as providing a further opportunity to engage with the wider computing community.</p> <p>Although work placements are not mandatory on the course, Beacon recruitment will be present at the induction to discuss the options for work placements. Students will be encouraged to undertake industry work placements throughout their programme to enrich the skills and knowledge gained and develop contacts in a range of industries. Students will also be encouraged to register with Beacon recruitment to gain part-time employment whilst studying.</p>
<p>Guest Speakers</p>	<p>A programme of events has been developed where experts from industry or visiting academics in the subject area that is being studied will present to the students. The School of Computing runs a series of 'Tech Talks' where industry specialists have visited the College to speak with students, local employers and College stakeholders. Recent examples include Marcus Robinson from Microsoft and Stuart Mackintosh from Open UK.</p> <p>The School of Computing also holds an annual Student Conference. This features talks from alumni who are now working successfully in industry. The conference also features talks from final year degree students who, through sharing their experience, provide inspiration and focus for our Level 4 and 5 students.</p> <p>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.</p>



<p>Field Trips</p>	<p>Effectively planned field trips, which have a direct relevance to the syllabus, add value to the learning experience. The School of Computing plan a range of visits to conferences, seminars and events during the academic year. These include visits to:</p> <ul style="list-style-type: none"> <li>▪ IPEXpo in Manchester</li> <li>▪ Leeds Tech User Group</li> <li>▪ Tech Huddle in Manchester</li> <li>▪ Leeds Digital Job Fair</li> </ul> <p>Through these trips students relate theory to practice, have an opportunity to experience organisations in action, and potentially open their minds to career routes.</p>
<p>The programme will produce students who possess a rounded knowledge and understanding of Computing principles and have the skills to analyse complex problems appropriate to Computing. 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 2014-20 and the College's BTEC HNC/HND Regulations (May 2016).</p> <p>All students have access to College library/learning centre resources including Maths and English Language workshops.</p> <p>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.</p>	
<p><b>16</b></p>	<p><b>Key Assessment Strategy/Methods</b></p> <p>The programme assessment strategy was developed with reference to the College HE Learning, Teaching and Assessment Strategy 2014-20 and the College's BTEC HNC/HND Regulations (May 2016). The assessment process for the HND Computing (Intelligent Systems) programme 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.</p> <p>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</p>

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 course 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
- time-constrained tasks

All written work related to assessments will be submitted via Turnitin to ensure authentication of students' work.

17	<b>Programme Units</b>					
	<b>Stage 1 (total 120 credits)</b>					
	Unit number	Pearson Code	Title	Credits	Level	Mandatory Core or Centre Selected Specialist Unit
	1	D/615/1618	Programming	15	4	Mandatory Core
	2	H/615/1619	Networking	15	4	Mandatory Core
	3	Y/615/1620	Professional Practice	15	4	Mandatory Core
	4	H/615/1622	Database Design and Development	15	4	Mandatory Core
	5	K/615/1623	Security	15	4	Mandatory Core
	6	T/615/1625	Managing a Successful Computing Project	15	4	Mandatory Core
	9	J/615/1631	Software Development Lifecycles	15	4	Centre Selected Specialist Unit
12	K/615/1637	Data Analytics	15	4	Centre Selected Specialist Unit	

**Stage 2 (total 120 credits)**

Unit number	Pearson Code	Title	Credits	Level	Mandatory Core or Centre Selected Specialist Unit
13	T/615/1639	Computing Research Project	30	5	Mandatory Core
14	M/615/1641	Business Intelligence	15	5	Mandatory Core
19	D/615/1649	Data Structures and Algorithms	15	5	Centre Selected Specialist Unit
20	Y/615/1651	Advanced Programming	15	5	Centre Selected Specialist Unit
26	J/615/1662	Machine Learning	15	5	Centre Selected Specialist Unit
27	L/615/1663	Artificial Intelligence	15	5	Centre Selected Specialist Unit
43	T/615/1690	Internet of Things	15	5	Centre Selected Specialist Unit

**18 Programme Structure**

Both the full-time and part-time HND Computing (Intelligent Systems) structures are a blend of semesterised and year-long units. 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 programme has a total value of 240 credits and is equivalent to approximately 2400 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 960 GLHs.

The full-time structure of the HND Computing (Intelligent Systems) is the same for both a September and January start. The decision to run both the September and January starts is dependent on recruiting a viable cohort.

Part-time students will typically study alongside full time students. However, consideration will be given to running a separate part-time cohort where there is specific industry demand.

**Full-Time September and January start structure**

Full-Time - Year 1	
Semester 1	Semester 2
Unit 2: Networking	Unit 5: Security
Unit 3: Professional Practice	Unit 6: Managing a Successful Computing Project
Unit 12: Data Analytics	Unit 9: Software Development Lifecycles
Unit 1: Programming	
Unit 4: Database Design and Development	

Full-Time - Year 2	
Semester 1 (September)	Semester 2 (January)
Unit 19: Data Structures and Algorithms	Unit 14: Business Intelligence
Unit 20: Advanced Programming	Unit 27: Artificial Intelligence
Unit 26: Machine Learning	Unit 43: Internet of Things

Unit 13: Computing Research Project (30 Credits)

**Part-Time September start**

Part-Time - Year 1	
Semester 1 (September)	Semester 2 (January)
Unit 2: Networking	Unit 5: Security
Unit 12: Data Analytics	
Unit 1: Programming	

Part-Time - Year 2	
Semester 1	Semester 2
Unit 3: Professional Practice	Unit 6: Managing a Successful Computing Project
	Unit 9: Software Development Lifecycles
Unit 4: Database Design and Development	

Part-Time - Year 3	
Semester 1	Semester 2
Unit 20: Advanced Programming	Unit 27: Artificial Intelligence
Unit 19: Data Structures and Algorithms	Unit 43: Internet of Things

Part-Time - Year 4	
Semester 1	Semester 2
Unit 26: Machine Learning	Unit 14: Business Intelligence
Unit 13: Computing Research Project (30 Credits)	

**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 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 to the 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 Course Handbook and supported in gaining access to on-line resources.
- Extensive use is made of a VLE. This has comprehensive support material at course 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 Computing is equipped with hardware and software that reflects the standards required by industry. Specialist software is provided. Hardware and Software 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 Computing and its pathways 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 6 and 7 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 Computing 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 Computing have established close links with both local business and the local community. Wherever practicable, assessment on the programme reinforces these links. Examples include:

Unit 43: Internet of Things. In this unit students will work alongside Incommunities (a local organisation who seek to create sustainable housing) in the development of an App which will support the community.

Unit 3: Professional Practice. In this unit students will plan and deliver a conference aimed at local businesses and College stakeholders.

At the end of each academic year, the School of Computing holds an open event for local and regional businesses where students can demonstrate and showcase their Project work. This forms an integral part of the learning experience and helps create a valuable link between the College, its students and employers. The conference is sponsored by Eclipse – a local software development company – who will mentor students undertaking project work as well as providing specialist talks and hosting student visits.

21	<p><b>Regulation of Assessment</b></p> <p>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.</p>
22	<p><b>Indicators of Quality and Standards</b></p> <p>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 Academic Quality and Standards calendar. This cycle includes unit review/evaluation by students and staff and Student Experience Surveys (SES).</p> <p>Measures are in place to ensure robust internal and external quality assurance. These quality-related processes are outlined below:</p> <p>Programme committee meetings and annual monitoring events which are attended by student representatives.</p> <p>Unit reviews which are completed by students.</p> <p>Moodle will also host chatrooms and forums so that students can liaise regularly with one another as well as tutors.</p> <p>The delivery of the HND Computing (Intelligent Systems) 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.</p> <p>The programme will also be subject to external quality assurance processes such as external examiner review.</p>
23	<p><b>The Role of the Awarding Body</b></p> <p>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.</p> <p>BTEC Higher Nationals are directly available from Pearson as RQF qualifications. To offer BTEC Higher Nationals, colleges must have both Centre and Qualification Approval.</p> <p>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.</p>

**24 External Examination**

Pearson/BTEC 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.

**Map of Outcomes to Units**

	Knowledge and Understanding													Cognitive Skills						Applied Skills								Transferable Skills																
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
L4 Unit 1 Programming	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 Networking	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 3 Professional Practice	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 4 Database Design and Development	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		X	X		
L4 Unit 5 Security	X		X			X			X						X	X		X			X	X	X					X	X	X	X	X	X		X	X	X		X		X			
L4 Unit 6 Managing a Successful Computing Project	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	X	X		X	X	X	
L4 Unit 12 Data Analytics	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 9 Software Development Lifecycles	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 13 Computing Research Project	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	X		X	X	X

	Knowledge and Understanding													Cognitive Skills						Applied Skills								Transferable Skills																
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
L5 Unit 14 Business Intelligence	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 19 Data Structures and Algorithms	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 20 Advanced Programming	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 26 Machine Learning	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 27 Artificial Intelligence	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 43 Internet of Things	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	