



HARROW INDEPENDENT COLLEGE

School of Mathematics, Science & Economics

Your Pathway to Top British Universities

BTEC Higher National Programmes in Data Analytics and Intelligent Systems

Data Analytics (DA) is one of the blooming disciplines and it is taking over a lead role in all the businesses, commerce, and other relevant sectors to transform them into data-driven decision makers which help them in increasing their productivity. As per the statistics, there is a shortage of skilled data analysts in the industry as of now.

On the other hand, Artificial Intelligence (AI) has become a part of our life now; from mobile phones to self-driving cars, anything with technology will not function without AI. There is a high demand for AI and many job opportunities are available for AI engineers in all types of sectors and industries.

HIC is bringing AI and DA specialised Higher Education to your doorsteps. HIC provides 2 HNC to HND programmes

for aspiring candidates to become AI and Data Analytics experts.

- HND in Intelligent Systems programme : It is ideal for those candidates who wish to build a career in the Artificial Intelligence sector.
- HND in Data Analytics programme: It is for those candidates who would like to develop their carrier in Data Analytics.

HIC provides excellence in education and hands-on training in affordable value for money.

Career prospects can include AI Engineers and Machine Learning Engineers. Alternatively, there are opportunities for AI-based Game Developers.

The HNC/HND qualifications at HIC offers a choice of a general Computing strand at level 4 and two specialist pathways at level 5, with a range of general and specialist units, core and optional:

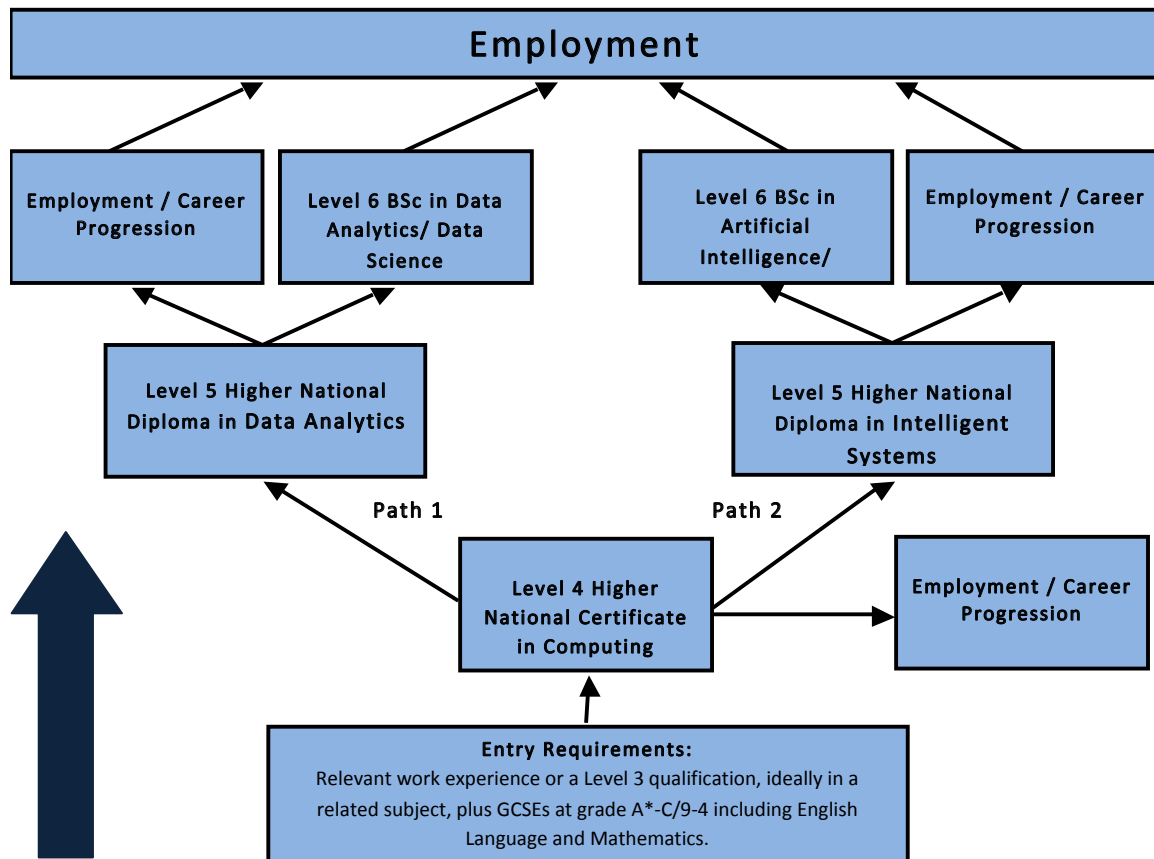
1. Data Analytics (Path 1)
2. Intelligent Systems (Path 2)

Each unit has a clear purpose: to cater for the increasing need for high quality professional and technical education pathways at levels 4 and 5, providing students with a clear line of sight to employment or progression to a degree at level 6. Each pathway consists of a total of 120 credits at level 5, delivered via core, specialist and optional units.



Stimulating Brilliance





Path 1 - HNC to HND in Data Analytics (Total 15 Units)

Unit	HNC Computing (8 Units)	Unit	HND Data Analytics (7 Units and a Research Project)
Core Unit	Programming	Core Unit	Computing Research Project
Core Unit	Networking	Core Unit	Business Intelligence
Core Unit	Professional Practice	Core Unit	Discrete Maths
Core Unit	Database Design and Development	Core Unit	Data Mining
Core Unit	Security	Core Unit	Applied Data Analytics Models
Core Unit	Managing a Successful Computing Project	Optional Unit	Emerging Technologies
Optional Unit	Data Analytics	Optional Unit	Data Structure and Algorithm
Optional Unit	Website Design and Development		

Path 2 - HNC to HND in Intelligent Systems (Total 15 Units)

Unit	HNC Computing (8 Units)	Unit	HND Intelligent Systems (7 Units and a Research Project)
Core Unit	Programming	Core Unit	Computing Research Project
Core Unit	Networking	Core Unit	Business Intelligence
Core Unit	Professional Practice	Core Unit	Data Structure and Algorithm
Core Unit	Database Design and Development	Core Unit	Machine Learning
Core Unit	Security	Core Unit	Artificial Intelligence
Core Unit	Managing a Successful Computing Project	Optional Unit	Emerging Technology
Optional Unit	Strategic Information Systems	Optional Unit	Advanced Programming
Optional Unit	Website Design and Development		

Programme Summaries

Pearson BTEC Level 4 HNC Computing

This qualification provides a thorough grounding in the key concepts and practical skills required for success in careers in computing and systems development. It provides a progression route to the HND in Computing and Systems Development or a progression path to a degree programme at university. Students may choose to take this as a full-time or part-time course.

Aims of the Pearson BTEC Level 4 Higher National Certificate in Computing: The Pearson BTEC Level 4 Higher National Certificate in Computing offers students a broad introduction to the subject area via a mandatory core of learning, while allowing for the acquisition of skills and experience through the selection of optional units across a range of occupational sectors at Level 4. This effectively builds underpinning core skills while preparing the student for subject specialisation at Level 5. Students will gain a wide range of sector knowledge tied to practical skills gained in research, self-study, directed study and workplace scenarios.

Award: Pearson BTEC Level 4 Higher National Certificate Computing

Location of study: Harrow Independent College

Course duration: 1 year (full-time), 2 years (part-time)

Guided Learning Hours (GLH): Total Guided Learning (GL) for Higher National Certificate (HNC) = 480 hours

Academic year dates: Full-time course: September 2018 - June 2019, Part-time course: September 2018 - June 2020

Days of the week: TBC

Part-time study: Please note that part-time study does not necessarily mean that the modules you take in Year 1 will equate to 2.5 full days attendance. As part-time study could mean attendance of some modules that are on the full-time timetable, it may mean that you will be required to attend modules timetabled over five days of the week.

Work placements: If you would like to undertake a work placement as part of the course, our placement staff will work with you to try to identify a suitable opportunity and location for your work placement in the UK. Please note that you are responsible for any expenses incurred in travelling to and from your work placement location.

Timetables: Timetables will be available at enrolment.

Course leader:

Entry Requirements: Relevant work experience or a Level 3 qualification, ideally in a related subject, plus GCSEs at grade A*-C/9-4 including English Language and Mathematics.

Course Overview: The Pearson BTEC Level 4 Higher National Certificate in Computing offers students a broad introduction to the subject area via a mandatory core of learning, while allowing for the acquisition of skills and experience across a range of occupational sectors at Level 4. This effectively builds underpinning core skills while preparing the student for subject specialisation at Level 5. Students will gain a wide range of sector knowledge tied to practical skills gained in research, self-study, directed study and workplace scenarios.

Module Information: The course will comprise the following Level 4 units:-

- **Programming (15 credits):** This unit introduces students to the core concepts of programming with an introduction to algorithms and the characteristics of programming paradigms.
- **Networking (15 credits):** The aim of this unit is to provide students with wider background knowledge of computer networking essentials, how they operate, protocols, standards, security considerations and the prototypes associated with a range of networking technologies.
- **Professional Practice (15 credits):** This unit provides a foundation for good practice in a variety of contexts. The ability to communicate effectively using different tools and mediums will ensure that practical, research, design, reporting and presentation tasks are undertaken professionally and in accordance with various communication conventions.
- **Database Design & Development (15 credits):** The aim of this unit is to give students opportunities to develop an understanding of the concepts and issues relating to database design and development, as well as to provide the practical skills to translate that understanding into the design and creation of complex databases.
- **Security (15 credits):** The aim of this unit is to provide students with knowledge of security, associated risks and how security breaches impact on business continuity. Students will examine security measures involving access authorisation, regulation of use, implementing contingency plans and devising security policies and procedures.
- **Managing a Successful Computing Project (15 credits):** The aim of this unit is to offer students an opportunity to demonstrate the skills required for managing and implementing a project. Students will undertake independent research and investigation for carrying out and executing a computing project which meets appropriate aims and objectives.
- **Website Design & Development (15 credits Optional Unit):** This unit introduces students to the underpinning services required to host, manage and access a secure website before introducing and exploring the methods used by designers and developers to blend back-end technologies (server-side) with front-end technologies (client-side).

- **Data Analytics (15 credits Optional Unit):** This unit will introduce the theoretical foundation of data analytics and a range of data analytic processes and techniques to provide hands-on experience for enhancing students' skills.

Students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation which are crucial for gaining employment and developing academic competence.

- **Strategic Information Systems (15 credits Optional Unit):** This unit introduces students to the importance of information to organisations. It will examine how systems can be used to support core business functions and enable organisations to be more productive and competitive within the global marketplace. Students will be required to analyse the information needs of an organisation at different levels and within different functional areas. It is important that computing professionals are able to understand how an organisation works and how it uses information in order to be able to design, implement, maintain and manage secure information systems to support its operations. Among the topics included in this unit are understanding organisations in terms of their information needs and the variances within different functional areas. Examination of different information systems at the operational, tactical and strategic levels will be required, in addition to evaluating their effectiveness and role in terms of decision making and gaining competitive advantage. On successful completion of this unit students will have an insight into the types of systems and technologies available for effective information processing. Critical analysis will also be used to examine the integrated role that each of these play in contributing to the efficiency and competitiveness of organisations.

Teaching: You are taught through a combination of lectures and practicals. Practical and seminars enable you to discuss and develop your understanding of topics covered in lectures in smaller groups of students. In addition, you have timetabled meetings with your personal tutor. You will use industry-standard software and have access to computer labs throughout your course.

Independent learning: When not attending lectures, seminars and other timetabled sessions you will be expected to continue learning independently through self-study. Typically, this will involve reading, working on individual and group projects, undertaking research in the Learning Resource Centre (LRC), preparing coursework assignments and presentations, and preparing for examinations. Your independent learning can be supported by faculty Skype calls with a reasonable advance notice.

Overall workload: Your overall workload consists of class contact hours, independent learning, and assessment activity, with each credit taken equating to a total study time of around 10 hours. While your actual contact hours may depend on the optional modules you select.

Teaching staff: You will be taught by an experienced teaching team whose expertise and knowledge are closely matched to the content of the modules on the course. The team includes senior academics and professional practitioners with industry experience.

Fees: For course fee information see page 7

Inflation linked tuition fee rises: The College may decide to increase tuition fees year on year at a reasonable rate in line with inflation. Any increases would not exceed the Office for Budget Responsibility's forecast for RPI-X (the retail price index, excluding mortgage interest payments). This intention will be clearly advertised on the College's promotional material. The following course-related costs are included in the fees:

- Course handouts

The following course-related costs are not included in the fees:

- printing costs
- the cost of books that you might wish to purchase.

Careers and Progression: Students who successfully complete this qualification may wish to progress to a Higher National Diploma in Computing, an undergraduate degree or employment in Data Analytics or Website Design and Development.

Pearson BTEC Level 5 - HNC to HND in Data Analytics/ HNC to HND in Intelligent Systems

This course allows those learners who have achieved the Higher National Certificate in Computing to progress to HND in Data Analytics and HND in Intelligent Systems and then on to university if desired. It provides a thorough grounding in the key concepts and practical skills required for success in careers in computing and systems development.

Aims of the Pearson BTEC Level 5 - HNC to HND in Data Analytics/ HNC to HND in Intelligent Systems: The Pearson BTEC Level 5 Higher National Diploma in Data Analytics/ Intelligent Systems offers students two 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 can provide professional status and progression to direct employment.

Award: Pearson BTEC Level 5 - HNC to HND in Data Analytics/ HNC to HND in Intelligent Systems

Location of study: Harrow Independent College

Course duration: 1 year (full-time) 2 years (part-time)

Guided Learning Hours (GLH): Total Guided Learning (GL) for Higher National Diploma (HND) = 960 hours

Academic year dates: Full-time course: September 2018 - June 2019, Part-time course: September 2018 - June 2020

Days of the week: TBC

Work placements: If you would like to undertake a work placement as part of the course, our placement staff will work with you to try to identify a suitable opportunity and location for your work placement in the UK. Please note that you are responsible for any expenses incurred in travelling to and from your work placement location.

Timetables: Timetables will be available at enrolment.

Course leader:

Entry Requirements: A BTEC Level 4 HNC Computing plus GCSEs at grade A*-C/9-4 including English Language and Mathematics.

Course Overview: The Pearson BTEC Level 5 Higher National Diploma in Data Analytics/ Intelligent Systems offers students a non-specialist 'Computing' pathway, which allows students to complete a Pearson BTEC Higher National Diploma without committing to a particular professional specialism. This offers additional flexibility to students and can provide progression to direct employment.

Module Information: The course will comprise the following Level 5 units:-

- **Computing Research Project (30 credits):** The aim of this unit is to offer students the opportunity to engage in sustained research in a specific field of study. The unit enables students

to demonstrate the capacity and ability to identify a research theme, to develop research aims, objectives and outcomes, and to present the outcomes of such research in both written and verbal formats.

- **Business Intelligence (15 credits):** This unit introduces students to a range of tools, techniques and technologies for acquiring data and processing this into meaningful information that can be used to support business functions and processes. Within this unit students will examine the concept of business processing in terms of data capture, conversion and information output. Students will also be required to define the tools and technologies associated with business intelligence functionality.

- **Discrete Maths (15 credits):** This unit introduces students to the discrete mathematical principles and theory that underpin software engineering. Through a series of case studies, scenarios and tasked-based assessments students will explore set theory and functions within a variety of scenarios; perform analysis using graph theory; apply Boolean algebra to applicable scenarios; and finally explore additional concepts within abstract algebra.

- **Data Mining (15 credits):** This unit will introduce the theoretical foundation of data mining and a range of data mining processes and techniques. The unit will also provide hands-on experience in developing data mining applications using an appropriate programming language or data mining tool.

- **Applied Analytical Models (15 credits):** This unit introduces students to applied analytical models used in business to discover, interpret and communicate meaningful patterns of data held in silos or data warehouses, and to derive knowledge to gain competitive advantage. Organisations may apply analytical methods and models to predict/prescribe business outcomes and improve performance in diverse areas such as stock control, financial risk and fraud analysis.

- **Machine Learning (15 credits):** Machine learning is the science of getting computers with the ability to learn from data or experience to solve a given problem without being explicitly programmed. It has been around for many years, however it has become one of the hottest fields of study in the computing sector. Machine learning is in use in several areas such as predictive modelling, speech recognition, object recognition, computer vision, anomaly detection, medical diagnosis and prognosis, robot control, time series forecasting and much more.

- **Artificial Intelligence (15 credits):** One of the dreams of the computing sector is to build an intelligent digital assistant that could serve people according to peoples' nature. Building this type of intelligent machine is a big challenge to computer scientists. An intelligent machine must have at least the following behaviours – vision, speech and voice recognition, smelling sense, learning from experience to solve new problems and coping with the unknown. The science of artificial intelligence (AI) is trying to overcome these challenges by combining the study of nature, understanding from humans' intelligent behaviour and brain function, other animal's acute senses, with mathematics, statistics, logic and traditional computer science.

- **Emerging Technologies (15 credits Optional Unit):** This

unit introduces students to the role, benefits, disadvantages and potential outcomes Emerging Technologies have in the development of software applications. The aim of the unit is to enhance the student's understanding of the current state, terminology, advantages, disadvantages, potential impact and benefits of Emerging Technologies on the development of software applications.

- **Data Structures & Algorithms** (15 credits Optional Unit HND Data Analytics/ Core Unit in HND Intelligent Systems): This unit introduces students to data structures and how they are used in algorithms, enabling them to design and implement data structures. The unit introduces the specification of abstract data types and explores their use in concrete data structures.
- **Advanced Programming** (15 credits Optional Unit): Features of programming languages that are considered advanced are used to develop software that is efficient; it can affect the performance of an application as well as the readability and extensibility of the code, improving productivity and therefore reducing cost.

Teaching: You are taught through a combination of lectures and practicals. Practical and seminars enable you to discuss and develop your understanding of topics covered in lectures in smaller groups of students. In addition, you have timetabled meetings with your personal tutor. You will use industry-standard software and have access to computer labs throughout your course.

Independent learning: When not attending lectures, seminars and other timetabled sessions you will be expected to continue learning independently through self-study. Typically, this will involve reading, working on individual and group projects and undertaking research in the Learning Resource Centre (LRC), preparing coursework assignments and presentations, and preparing for examinations. Your independent learning can be supported by faculty Skype calls with a reasonable advance notice.

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- Course handouts

The following course-related costs are not included in the fees:

- printing costs
- the cost of books that you might wish to purchase.

Careers and Progression: On successful completion of the Pearson BTEC Higher National Diploma at Level 5, students can develop their careers in the computing sector through:

- Entering employment
- Continuing existing employment
- Linking with the appropriate vendor accredited certificates
- Committing to Continuing Professional Development (CPD)
- Progressing to university.

The Level 5 Higher National Diploma is recognised by higher education providers as meeting admission requirements to many relevant computing-related courses.

Fee Information

Higher National Certificate (HNC)

Programme	Local Students Fees per annum	International Students Fees per annum
One year regular HNC programme Standard programme	£8900	£15500
Two year part-time programme Programme designed to suit the needs of working candidates	£4450	*Not Applicable

Higher National Diploma (HND)

Programme	Local Students Fees per annum	International Students Fees per annum
One year regular HND programme Standard programme	£8900	£15500
Two year part-time programme Programme designed to suit the needs of working candidates	£4450	*Not Applicable

ADDITIONAL FEE

Registration fee (non-refundable)	£150
Laboratory charges for Computing	£150

* Only Full-Time (One-year regular) programmes are offered for International Students

Tuition Fees Payment Structure

For local students: Fees are paid annually or in monthly instalments.

Annual Fee Payment: Tuition fee payments made for the whole academic year in full within the 1st 30 days of the start of the course, will draw a 5% discount on the amounts quoted above. Please note that this does not apply to registration fees, or any other additional fees.

Monthly Fee Payments: Monthly fees must be paid by bank transfer or card in 6 instalments. The first instalment should be made by bank transfer, card or cash before the start of the course and the subsequent five payments, before the due date, must be paid by bank transfer or card.

For international students: Full annual fee must be paid before the start of the course.

One full term (3 months) notice period will be required, in the event of leaving Harrow Independent College.

Additional Information:

Textbooks: Text books are not supplied by the College. Students will be provided with the book names and will be required to obtain these books externally.

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