IfATE Digital Submission December 2020

Document 1: Rationale for the inclusion of additional occupationally relevant content

Key design principles

The BTEC Higher National (HN) suite is designed to support students in their development of higher level technical knowledge, skills and behaviours, as defined by employers and other key stakeholder groups. They support progression to higher level skilled occupations. Alongside this they support the development of higher level knowledge, skills and behaviours which will facilitate student progression to further study beyond level 5. The HNs are designed with occupational outcomes in mind, but with the appropriate higher level of demand to support progression to post level 5 study.

The design and development principles of the suite support this dual role in a variety of ways.

- Relevant Institute for Apprenticeships and Technical Education (IfATE) Occupational Standards are considered in the development process and required Knowledge, Skills and Behaviours (KSBs) are incorporated into the learning outcomes through their inclusions in the qualification Essential Content to ensure coverage.
- Qualification purpose and content defined in consultation with external stakeholders, including employers, professional bodies, higher education institutions, students and HN providers, and reviewed and updated on an annual basis to ensure currency of content.
- Wherever possible professional recognition is built into the HNs, either by becoming recognised by professional bodies, including coverage of relevant professional body standards, or by providing exemptions to professional qualifications.
- In order to support student progression beyond level 5, the appropriate level of demand is incorporated (level 4 Higher National Certificate (HNC), and level 5 Higher National Diploma (HND)) when writing content and assessment criteria to further support progression to level 6 study.
- Built with reference to coverage of aligned Level 3 programmes such as BTEC Nationals, to support students who are progressing through technical routes.

Occupationally relevant content

The occupationally relevant content in the Higher Nationals in Computing has been included based on input from a range of stakeholders including employers. Unit-level rationale for the inclusion of units built from occupationally relevant content is included below. Reference points in the development of content and assessment standards in occupationally relevant units include:

- Findings from employer engagement activities
- Professional body and Vendor standards
- The Quality Assurance Agency's (QAA) [Framework for Higher Education Qualifications](#) (FHEQ) qualification descriptors and QAA Subject Benchmark Statements.

Occupationally relevant content in the HNs in Computing has been deemed relevant to the occupation on the basis that it will increase the breadth and depth of understanding of a student in their chosen occupational field and is broadly relevant to success in the sector in which the occupation is positioned in the route maps. Attendees at the most recently held employer engagement event for HNs in Computing (see Document 2: HN Computing ESAG minutes) **supported the idea of additional content beyond KSBs**, including that which supports the development of logical thought, breadth, decision making in a wider context, soft and interpersonal skills, team building – all part of building a better skill set for employability. The Amazon Web Services (AWS) panelist at this event commented that the qualification should continue to support the development of 'diversity of thought', the ability to explore, and that coverage of the KSBs alone may limit this. The example of the inclusion of the optional unit on the 'Internet of Things' was given as an effective way to give students an understanding of what is useful to the broader workplace, not just their role. The use of common optional units across pathways was supported e.g. Security, to support students in developing the knowledge, skills and behaviours needed **across job roles** for the Digital sector.

The point about breadth and optionality was also supported by the Institute for Engineering and Technology and the British Computing Society (engaged in October 2020 for their views).

Unit level rationales for occupationally relevant units are as follows:

Unit	Title	Rationale
12	Management in the Digital Economy	This unit introduces students to the concept of organisational behaviour and encourages them to apply this to the digital sector, developing an awareness of how organisations in the digital economy are organised and formed. This unit serves to broaden study and understand wider implications of technology use.
13	Website Design and Development	Employer feedback was in support of a unit which provided skills in developing and supporting websites as this is integral to many job wider IT job roles and the content covered within supports wider learning.

14	Maths for Computing	This is an important unit for those wishing to develop deeper computer programming skills and will add value for Software Developers. This was considered in agreement with the stakeholder feedback.
20	Applied Programming and Design Principles	This is a core unit for Software Engineering pathway and the Software Developer OS. The KSB's have been covered across the other units in the pathway, but this unit is integral to the skills requirement for a software developer.
21	API	This is a core unit for Application Development pathway. The KSB's have been covered across the other units in the pathway, but this unit is integral to the skills requirement for a software developer.
22	Application Development	This is a core unit for Application Development pathway which aligns to the Software Test OS. The KSB's for Software Tester have been covered across the other units in the pathway, but this unit is integral to the skills requirement for the Application Development pathway and the role of a software developer/tester.
33	Applied Analytical Models	Can be used to add breadth and depth to Data analyst pathway. These are advanced units and add depth to the basic knowledge covered by the Data Analyst OS.
34	Analytical Methods	
35	Systems Analysis and Design	This unit was added to the optional unit bank to offer students of computing a deeper understanding of how any system can be upgraded or a new system developed. The content covered here adds a lot of value to other units when combined.
36	User Experience and Interface Design	This unit was added to the optional unit bank to complement units 21, 22 and 35. In combination they can be studied in the general pathway to create a programme focused on systems development and adds value to other pathways and increases depth and breadth of study.
37	Architecture	These units offer additional breadth and depth of study for those students interested in Network Engineering or Software Engineering. Additionally, units such as Analytic Architecture Design add value to the learning done in programming units and other software design units.
38	Analytic Architecture Desig	
40	Client/Server Computing Systems	
42	Games Design Theory	These units offer the ability for a student to pursue an interest in games development (as part of the general pathway possibly), opening up more options for degree level studies beyond L5
43	Games Development	
44	Games Engine & Scripting	
45	Internet of Things	

46	Robotics	These units allow students to develop a broader understanding of technologies that are becoming prevalent outside of the main occupational pathways covered in the qualification. They can either be used together to form foundational knowledge for an Intelligent Systems L6 programme or can be selected individually to add wider knowledge to the pathway being studied
47	Emerging Technologies	
48	Virtual and Augmented Reality Development	
49	Systems Integration	This unit allows students to develop an understanding of how wider systems intergrate and work together. Regardless of job role and the systems being used, kowledge of integration provides valuable insight to wider technologies and how they interconnect.
50	Operating Systems	Stakeholder feedback considered this unit to be very complementary to many areas of the syllabus so students could understand the underpinning software and systems that controls computers and technology. The unit also serves to broaden and deepen knowledge of a fundamental area of computing which is also typically studied at level 3.
51	E-commerce and Strategy	These units were designed to appeal to a broader group of students who are interested in understanding wider implications of technology use and developing a broader programme of study using the general pathway.
52	Digital Sustainability	
53	Digital Technologies as a Catalyst for Change	
54	Prototyping	This unit offers additional content and knowledge that can be used in the Applications Development and Software Engineering Pathway.