BSc (Hons) Computing and Digital Technologies

Programme Quality Handbook

Last validated in July 2024

Date of Last Review: August 2024

Contents

Programme specification

1. Overview / factual information

Programme/award title(s)	BSc (Hons) Computing and Digital Technologies
Teaching Institution	University Centre Somerset, part of Bridgwater and Taunton College
Awarding Institution	The Open University (OU)
Date of first OU validation	March 2019; Major Change Nov 2021
Date of latest OU (re)validation	February 2024
Next revalidation	2028/2029
Credit points for the award	120 credits Level 4 120 credits Level 5 120 credits Level 6 Total - 360 credit points – BSc (Hons)
UCAS Code	I160
HECoS Code	100367 Computing and Information Technology (was 100373 Internet Technologies)
LDCS Code (FE Colleges)	N/A
Programme start date and cycle of starts if appropriate.	September 2024
Underpinning QAA subject benchmark(s)	QAA Subject Benchmark Statement for Computing March 2022
Other external and internal reference points used to inform programme outcomes. **For apprenticeships, the standard or framework against which it will be delivered.**	Framework for Higher Education Qualifications (FHEQ) 2014 Foundation Degree Characteristics Statements 2020 SEEC Credit Level Descriptors 2021 NCSC The Cyber Assessment Framework (CAF) Version 3.1 Higher Apprenticeship Software Developer (ST0116) Degree Apprenticeship Digital and Technology Solutions Professional (ST0119)
Professional/statutory recognition	N/A

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in student module guide(s) and the students handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

For apprenticeships fully or partially integrated Assessment.	N/A
Mode(s) of Study (PT, FT, DL, Mix of DL & Face-to-Face) Apprenticeship	Full-Time Face-to-Face
Duration of the programme for each mode of study	3-years Full-Time
Dual accreditation (if applicable)	N/A
Date of production/revision of this specification	February 2024

2. Programme overview

2.1 Educational aims and objectives
• *To provide a comprehensive study of the theory and principles underlying computing and digital technologies, with a strong focus on industry standard skills and practices.* • *To cultivate a high level of expertise in students through the application, integration, and critical evaluation of a diverse range of innovative computing and digital technologies.* • *To foster the ability to use, compare, and critically assess various formal and informal techniques, theories, and methods applied to software development, web application development, networking, and cybersecurity.*

- *To provide opportunities for graduates to apply existing and emerging technologies to a range of novel applications.*

- *To develop understanding of cutting-edge technologies including machine learning, artificial intelligence, extended reality and Internet of Things and how they can be applied to a range of purposes across all areas of computing.*

- *To offer insights into the ethical, social, and sustainability implications of the computing and digital industries, preparing students for responsible professional practice.*

- *To provide opportunities for real-world experience and innovative problem-solving in the computing and digital industry through industry placements, team projects, and partnerships with regional, national, or international employers.*

- *To develop in students the ability to undertake complex projects with minimal supervision, effectively managing their time and workload.*

- *To enhance interpersonal skills, enabling students to take responsibility for their own professional development and innovation skills.*

- *To produce graduates who are well-equipped to make significant and innovative contributions to the computing and digital sector.*

- *To cultivate professional knowledge and skills that empower students to analyse problems, synthesise innovative solutions, collaborate effectively, and adapt to a rapidly evolving technological landscape.*

- *To align the programme with industry standards and occupational benchmarks, thereby enhancing the employability and professional standing of graduates, with a focus on innovative practices.*

- *To nurture and develop the next wave of digital innovators who are well-equipped to lead and contribute to advancements in the computing and digital sector.*

2.2 Relationship to other programmes and awards

(Where the award is part of a hierarchy of awards/programmes, this section describes the articulation between them, opportunities for progression upon completion of the programme, and arrangements for bridging modules or induction)
The programme is accessible as a progression route to students with various relevant qualification pathways within the subject area, including Access to HE courses, Level 3 Vocational/Technical Diplomas, A Levels, T Levels etc. Similarly, on successful completion of the BSc (Hons) Computing and Digital Technologies students can elect to continue onto post-graduate study (subject to meeting course entry requirements at their chosen institution), seek employment in the computing industry or enter teaching. The first year and second year course content (Levels 4 and 5) mirrors the Foundation Degree (FD) Computing and Digital Technologies qualification. The third-year course content (Level 6) mirrors the level 6 BA (Hons) Computing and Digital Technologies Top-up qualification.

2.3 For Foundation Degrees, please list where the 60-credit work-related learning takes place. For apprenticeships an articulation of how the work based learning and academic content are organised with the award.
SCDV46 Professional Skills and Industry Practices (20 credits) SCDV55 Application of Emerging Technologies (20 credits) SCDV56 Team Project and Industry Experience (20 credits)

2.4 List of all exit awards
• *Professional Certificate. Requires a minimum of 60 credits at level 4, from any combination of level 4 modules.* • *Certificate of Higher Education (CertHE). Requires a minimum of 120 credits at Level 4.* • *Foundation Degree (FD) Computing and Digital Technologies. Requires a total of 240 credits (minimum of 120 credits must be at Level 5).*

- *BSc (Hons) Computing and Digital Technologies. (Ordinary Degree) - Requires 300 credits (with a minimum of 60 credits at Level 6).*

3. Programme structure and learning outcomes

Programme Structure - LEVEL 4 Full Time					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
SCDV41 Programming and Software Fundamentals	20			Yes	A, B
SCDV42 Web Application Development	20			No	A, B
SCDV43 Cyber Security Fundamentals	20			Yes	A, B
SCDV44 Network Fundamentals and Design	20			Yes	A, B
SCDV45 Principles of Data Science	20			Yes	A, B
SCDV46 Professional Skills and Industry Practices	20			No	A, B

Level 4 Exit Award:

Professional Certificate. Requires a minimum of 60 credits at Level 4.

Certificate of Higher Education (CertHE). Requires a minimum of 120 credits at Level 4.

Programme Structure - LEVEL 5 Full Time					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
SCDV51 Software Engineering	20			Yes	A, B
SCDV52 Full Stack Development	20			Yes	A, B
SCDV53 Cyber Incident Response	20			Yes	A, B
SCDV54 Network Infrastructure Management	20			Yes	A, B
SCDV55 Application of Emerging Technologies	20			No	A, B
SCDV56 Team Project and Industry Experience	20			No	A, B

Level 5 Exit Awards:

Certificate of Higher Education (CertHE). Requires a minimum of 120 credits at Level 4.

Foundation Degree (FD) Computing and Digital Technologies. Requires a total of 240 credits (minimum 120 credits at Level 5).

Programme Structure - LEVEL 6 Full Time					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**

Programme Structure - LEVEL 6 Full Time					
SCDV61 Secure Software Design	20			Yes	A, B
SCDV62 Human Computer Interaction	20			Yes	A, B
SCDV63 Ethical Hacking	20			Yes	A, B
SCDV64 Cloud Infrastructure Design and Deployment	20			Yes	A, B
SCDV65 Individual Capstone Project	40			No	A, B

Level 6 Exit Awards:

Foundation Degree (FD) Computing and Digital Technologies. Requires a total of 240 credits (minimum 120 credits at Level 5).

BSc Computing and Digital Technologies (Ordinary Degree). Requires 300 credits (minimum 60 credits at Level 6)

Intended learning outcomes at Level 4 are listed below:

Learning Outcomes – LEVEL 4	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PA1 Examine the main facts, concepts, principles and practices pertaining to scenarios in computing and digital innovation. **PA2** Explore a range of models, languages and approaches to support the analysis, design, development, testing and evaluation of computing and digital solutions.	The curriculum has been designed to offer the opportunity of an orderly academic progression between levels of study within identifiable computer related themes. At Level 4, modules address the conceptual, technical and scientific underpinnings of the study of computing and digital technologies. PA1 and PA2 are introduced in contexts relating to digital systems by means of lectures, workshops and laboratories. Students are helped to understand the relevance to the modelling, analysis and development approaches to support the analysis, design and evaluation of computing and digital technologies solutions. Set activities are used to engender confidence and proficiency within the particular topics addressed.

Learning Outcomes – LEVEL 4	
3A. Knowledge and understanding	
	Assessment Formal assessment of knowledge and understanding is through coursework which will include portfolio work and written reports.

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PB1 Appraise and apply essential computing concepts, principles and practices in a range of scenarios, including specific domains and the digital innovation sector. **PB2** Demonstrate effective judgement and adaptability in the selection of tools and techniques for use in the development of computing and digital solutions.	Cognitive skill development within this programme is intended to be progressive across all study levels. A variety of digital systems and programming laboratories and equipment will provide environments and tools for system design, modelling and testing.

3B. Cognitive skills	
	These are used to foster the development of cognitive skills through a range of laboratory and/or study-based tasks typically relying on learning-in-action. **Assessment** Formal assessment of cognitive skills is through coursework which will include practical work and written reports

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PC1 Use a range of tools and techniques to appropriately and effectively design, develop, test and evaluate computing and digital solutions and examine the relationship between these stages. **PC2** Appraise practices and effective principled solutions within a professional, ethical and legal framework including data use and security; equality, inclusion and diversity (EDI); and sustainability.	Practical and professional skills are developed initially at Level 4 where communication skills, basic research skills and skills in using core principles and concepts are developed. At Level 4 students become involved in many different activities and are supported by regular and frequent formative feedback in laboratories and coursework. **Assessment** Formal assessment of practical and professional skills is through coursework which will include portfolio work, case study reports and presentations

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PD1 Apply critical and logical thinking to solving computational problems with a degree of independence. **PD2** Demonstrate active learning for life-long professional development through undertaking, reflecting and recording the development of professional capabilities.	During the course of the programme, assessed and non-assessed work encourages the learner to develop a wide range of transferable skills. Students acquire transferrable skills through presentations, lab-based tasks including independent and group project work. At Level 4, this starts with closely defined and directed assignments. **Assessment**

3D. Key/transferable skills	
	Formal assessment of key transferable skills will be undertaken via a combination of written coursework and presentations as well as practical work and recorded verbal and written feedback and production of a professional portfolio.

Intended learning outcomes at Level 5 are listed below:

Learning Outcomes – LEVEL 5	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PA3 Evaluate the core principles, practices, concepts and methods of development and how to apply these in the production of specific computing and digital solutions. **PA4** Demonstrate sound judgement in the use and development of computing and digital solutions within specific domains and the wider industry, and the limitations of such solutions.	The curriculum has been designed to offer the opportunity of an orderly academic progression between levels of study within identifiable computer related themes. At Level 5, there is significant horizontal integration of learning materials; for example, advanced programming concepts and terminology are introduced in one module, and in another real-life scenarios (such as cyber security case studies) are used to deepen and refine understanding. Progressively increasing levels of appreciation of quality (PA3) and performance aspects of products and processes is also encouraged and expected in practical work and coursework at Level 5.

Learning Outcomes – LEVEL 5	
3A. Knowledge and understanding	
	Assessment Formal assessment of knowledge and understanding is through coursework which will include case study reports and project work.

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PB3 Critically analyse a range computing concepts, principles and practices relating to a range of scenarios, including specific domains, the wider industry and within the sector of innovation. **PB4** Exercise critical judgement and adaptability in the selection of tools and techniques for use in the development of computing and digital solutions.	Cognitive skill development within this programme is intended to be progressive across all study levels. At Level 5 a new range of topics are introduced which typically involve an increasingly systems-level content and orientation as modules progress and there is an increasing emphasis on design, problem solving and analysis.

3B. Cognitive skills	
	A variety of networking and programming laboratories and equipment will continue to provide environments and tools for system design, simulation and testing. **Assessment** Formal assessment of cognitive skills is through coursework which will include practical work, case study and written reports.

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PC3 Undertake problem identification and critical analysis to design, develop, test, deploy and evaluate complex computing and digital solutions, including the use of simulation and modelling.	At Level 5 the development of practical and professional skills is progressed, especially in the contexts of group project work and coursework where the emphasis is placed on autonomous application of

3C. Practical and professional skills	
PC4 Employ professional, ethical and industry practices to plan and manage computing and digital projects within the constraints of requirements, timescale and budget; and within a professional, ethical and legal framework.	digital systems analysis, modelling and design skills as well as reflection on such practices. **Assessment** Formal assessment of practical and professional skills is through coursework which will include practical work, work placement and team project work.

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PD3 Work effectively both autonomously in independent activity, and proactively as a member of a group or project team whilst effectively planning, managing time and other resources with the support of appropriate tools and techniques. **PD4** Communicate information, arguments, ideas and issues effectively using a variety of media, and a range of methods appropriate to a given type of audience and the communication objective.	At Level 5 students will continue to acquire key transferrable skills through presentations, lab-based tasks including independent and group project work. However, the amount of instructional material will decrease as the programme progresses, with students being expected to take an increasing responsibility for developing their own skills and identifying resources to support this development. During Level 5 this support will be reduced and far more open tasks will be set. Students will be exposed to, and expected to utilise, a variety of technologies such as operating environments, programming languages, applications and specific design techniques. Students will be expected to follow appropriate ethical, professional and legal principles applicable within the computing and digital technologies domain. **Assessment**

3D. Key/transferable skills	
	Formal assessment of key transferable skills will be undertaken via a combination of presentations as well as practical work and working as part of a team.

Intended learning outcomes at Level 6 are listed below:

Learning Outcomes – LEVEL 6	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PA5 Demonstrate a comprehensive understanding of the main body of knowledge in computing and digital innovation including core principles, practices, concepts including the stages of developing digital solutions, and the relationships between them. **PA6** Demonstrate a comprehensive understanding of the professional, economic, social, environmental, moral and ethical issues involved in the development, innovation and management of computing and digital solutions.	At Level 6, students are expected to consolidate their critical knowledge and understanding of new material and to take greater responsibility for the selection of concepts, principles and methodology needed to analyse, synthesise and evaluate particular systems, processes and products in a range of contexts. Students undertake major individual project addressing the development of PA5 and PA6 in focussing on aspects of the project life cycle of a specific computer system. The project is designed to allow students to integrate and contextualise their understanding skills and abilities in a supportive and semi-structured environment. **Assessment**

Learning Outcomes – LEVEL 6	
3A. Knowledge and understanding	
	Formal assessment of knowledge and understanding is through coursework which will include practical work, case study reports and project work and documentation.

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PB5 Creatively and innovatively solve complex problems through applying appropriate principles, practices and concepts; and through exercising critical and refined judgement in the selection of tools for the specification, design, implementation, testing and evaluation of computing and digital solutions.	At Level 6 individual project work addresses PB5 and PB6, in which student learning includes an appreciation of the open-endedness and incompleteness of knowledge in practical computer problems. Throughout Level 6, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught/learnt and to broaden their individual cognitive skills and understanding of the subject.

3B. Cognitive skills	
PB6 Critically evaluate technical and specialist information, concepts, arguments, assumptions and evidence derived from a wide variety of sources to devise an innovative digital solution to a complex computer-based problem.	Some material will be presented via lectures and tutorials, but a significant component will be gained through self-study, some of it unguided. **Assessment** Formal assessment of cognitive skills is through coursework which will include presentations, case study reports, practical and project work.

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PC5 Manage learning with confidence and autonomy adhering to professional codes of conduct, legal and ethical frameworks; and	At Level 6 practical and professional skills are acquired mainly through the implementation of a major computing project, in which the students

3C. Practical and professional skills	
industry standard practices required in the computing and digital sector. **PC6** Propose, research, and undertake innovative project activity through proficient communication and planning; and report a devised solution for a complex computer-related problem in a structured manner, under minimal supervision.	will need to independently undertake technical research conducted professionally and following the scientific method. Coursework and practical laboratories are also used to deliver practical and professional skills. The self-defined and individually managed major project offers enhanced opportunities for developing either a wider range of professional skills, or developing specific practical skills to higher levels of proficiency. Throughout Level 6, the learner is encouraged to develop practical skills further by undertaking independent study. **Assessment** Formal assessment of practical and professional skills is through coursework which will include practical work, written reports and team project work. In addition, all Level 6 learning outcomes are assessed within the major computing project SCDV65 Individual Capstone Project.

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
PD5 Conduct research effectively, drawing on a wide variety of sources under minimal direction, and be proficient in the use of referencing sources of information, complying with best-of-kind practices within a professional, legal and ethical framework. **PD6** Apply sophisticated judgement, critical thinking and research design when problem solving to create effective computational systems for complex problems and situations, with a high degree of autonomy.	At Level 6 transferrable skills will be addressed using lectures and tutorials for the presentation of instructional material, with practical, independent study and project work offering the opportunity to practice the skills in a supportive environment. The students are being expected to take an increased responsibility for developing their own transferable skills and identifying resources to support this development. Throughout, the learner is encouraged to develop key transferable skills further by undertaking independent study and research. **Assessment** Formal assessment of key transferable skills will be undertaken via a combination of presentations, case studies reports, practical and project work.

4. Distinctive features of the programme structure

- **Where applicable, this section provides details on distinctive features such as:**
  - where in the structure above a professional / placement year fits in and how it may affect progression
  - any restrictions regarding the availability of elective modules
  - where in the programme structure students must make a choice of pathway/route

- **Additional considerations for apprenticeships:**
  - how the delivery of the academic award fits in with the wider apprenticeship
  - the integration of the 'on the job' and 'off the job' training
  - how the academic award fits within the assessment of the apprenticeship

Overall Programme:

- *The programme covers an expansive range of computing topics such as software development, web application development, networking and cyber security, plus the applications of machine learning, artificial intelligence, extended reality, IoT and other cutting-edge technologies to those topics, ensuring a well-rounded academic experience.*

- *The programme places a strong emphasis on digital innovation, emerging technologies, and sustainability, equipping graduates with the skills and knowledge to navigate the rapidly evolving technological landscape.*

- *The programme offers real-world experience through industry placements and team projects, providing valuable networking opportunities and practical skills.*

- *The programme incorporates various modes of delivery, including full-time, part-time, and face-to-face options, offering flexibility to accommodate different learning needs.*

- *The programme utilises innovative and creative assessments such as portfolios, presentations, demonstrations, walk-through, controlled assessment and projects, thereby minimising the potential misuse of generative AI.*

At Level 4:

- *The programme is designed to help students develop foundational skills in areas like programming, front-end development, networking, and cyber security, providing a strong base for future learning.*

• *A unique module on Professional Practice and Industry Skills encourages students to start building a professional development portfolio from the outset.*

At Level 5:

• *The programme incorporates a module that includes an industry placement, offering students valuable real-world experience and networking opportunities.*

• *Specialised modules in Software Engineering, Cyber Incident Response and Network Infrastructure Management provide learners the opportunity to develop core skills in innovative design and encourage creative solution development skills.*

• *Students engage in team projects that simulate real-world scenarios, thereby enhancing their practical skills and providing work-based learning opportunities.*

At Level 6:

- *The programme provides in-depth knowledge and skills in cutting-edge areas like secure design practices and cloud deployment, preparing students for a range of computing professions.*
- *Underlying topics that are applied to a wide range of specialisms within computing including AI, Machine Learning, VR and IoT are taught across modules instead of being distinct modules to develop understanding of how such tools are used across the industry.*
- *Specialised modules in Secure Software Design, Ethical Hacking, Cloud Infrastructure Design and Deployment and Human Computer Interaction provide learners the opportunity to develop high level specialised skills in innovative design and encourage creative solution development skills.*
- *Students undertake a major capstone project, allowing them to conduct independent research and gain practical experience in a chosen specialised area.*
- *Training with industry-standard software, industry standard materials and latest methodologies enhances the employability of graduates, equipping them with the skills needed for the modern workplace.*

5. Support for students and their learning

(For apprenticeships this should include details of how student learning is supported in the workplace)

Tutorials and Workshops

Tutorials and workshops are a crucial part of the learning process, as students have the opportunity to analyse problems and discuss issues in depth. Students should come to these sessions prepared to participate fully as these are a key means of facilitating active learning. These sessions are invaluable in developing independent learning; critical thinking and stronger analytical skills facilitating a process that encourages students to develop many of the key skills employers look for in the computing and digital industries. Students receive tutorial sessions and full-time first year learners also have independent enrichment sessions. Tutorials focus on the development of academic and professional skills including the development of a professional digital portfolio. Enrichment is focused on further developing technical skills on a chosen area of computing. These sessions allow students to have one-to-one tutorials with their personal tutor to discuss any personal, professional or academic issues.

Other Academic Support

In addition to timetabled teaching, there are other academic sessions and resources available for students. This is part of a deliberate strategy to help develop and manage students' own learning and provide high-quality pastoral support. This other academic support includes:

- Formative and summative feedback on assessed work – to help develop knowledge, understanding and skills through undertaking assessments and practical projects;
- Tutorials – Students have timetabled tutorials where work can be discussed with subject tutors. Students can also arrange to meet tutors to discuss work;
- The Learning Resource Centre (LRC) is available for study skills session. Students will also undergo the HEADStart (Higher Education Academic Development) study skills programme as part of their Tutorial provision. This programme covers academic skills including researching, referencing and academic writing.
- Additional learning support – many of our students benefit from the additional learning support by our dedicated Additional Learning Support

team. This support is tailored to each student's individual support need to support students with general study skills as well as specialist additional support in close collaboration with the course programme team;

- College Virtual Learning Environment, Student Portal and email. Some staff use these to initiate discussions and set up learning support groups for their modules;

- Electronic learning – Access to eBooks, electronic journals and research papers as well as resources such as eBook readers and laptop computers all serve to facilitate and support student learning and research practice.

6. Criteria for admission

(For apprenticeships this should include details of how the criteria will be used with employers who will be recruiting apprentices.)

GCSEs required at Grade 4 or above	4 GCSE subjects at 9 - 4 (or grades A* - C) including English and Maths.
A Levels required: AS/A2/UCAS Points Tariff	80 UCAS Points - AS/A2 (minimum 32 points at A2 level)
BTEC Qualifications (QCF)	80 UCAS Points - MMP (Extended Diploma), DM (Diploma); or Pre-degree Access Diploma.
T Levels required: UCAS Points Tariff	80 UCAS Points - MMP
HNC/D	N/A
VDA: AGNVQ, AVCE, AVS	Relevant AVCE (min 80 points)
International Baccalaureate	Accepted at 28 IB points and interview
Irish/Scottish Highers/Advanced Highers	2 Grade C or above – Scottish Higher/Advanced Higher. 2 Grade A to C's – Irish Leaving Certificate.

Other non-standard awards or experiences / mature students	Mature students who do not meet these formal entry requirements are welcome to apply, if they can evidence their commitment to the subject through previous experience.
Interview/portfolio requirements	Interview
Disclosure and Barring Services (DBS) Check – (formerly CRB check)	No

7. Language of study

All teaching, learning and assessment is conducted in English.

If English is not an applicant's first language they will be asked to provide evidence of their English language ability in order to apply and start the course.

The standard English language requirement for entry is IELTS 6.0 with a minimum of 5.5 in any one paper, or equivalent.

8. Information about non-OU standard assessment regulations (including PSRB requirements)

There will be no exceptions to the academic regulations of The Open University/University Centre Somerset.

The Open University Academic Regulations are available on the University Centre Somerset website at http://somerset.ac.uk.

9. For apprenticeships in England End Point Assessment (EPA)

(Summary of the approved assessment plan and how the academic award fits within this and the EPA)
N/A

10. Methods for evaluating and improving the quality and standards of teaching and learning

All programme teams participate in Annual Programme Monitoring during their Programme Committee Meeting every Autumn. This process involves obtaining student views as well as the views of the staff that delivered each module and where appropriate may consider the views of employers who have been involved with the programme. In order to ensure robust evaluation, the programme team also consider student opinion, programme statistics, (including retention, achievement, gender and ethnicity), and student survey results, in addition to the External Examiner report.

The programme team produces an action plan based on their evaluation to assist in bringing about the developments they have identified. Each Spring the Programme Committee Meeting is held again to review progress with the action plan and to canvas opinions from staff, students and employers connected to the programme. This evaluation process is overseen by the cross-college HE Senate, the Senate receives summary reports of all HE matters each term and produces and monitors a top level cross-college HE Enhancement Action Plan as a result.

Frequent Continuing Professional Development (CPD) sessions are run at the College for academic staff, to share good practice and to support effective teaching, learning and assessment. Peer Review is used at UCS. It is a supportive and productive developmental tool where staff observe each other.

University Centre Somerset has a formal structure for hearing the student voice. Student representatives from each group gather views that are widely felt, strongly felt and achievable and report these to the twice-yearly Programme Committee Meetings. In addition to this the Learning Resource Centre gain feedback, which helps them to improve their service to learners.

Students are requested to complete written surveys: the Student Perception Questionnaire / National Student Survey (NSS) in order to formally record their

impressions of the programmes. The HE Student Governor provides the student voice at Senate meetings which oversee HE provision at UCS, and at the Board of Governors.

These mechanisms are all designed to evaluate and improve the quality and standards of teaching and learning and the student experience.

11. Changes made to the programme since last (re)validation
N/A

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Annexe 1 - Curriculum map

This table indicates which study units assume responsibility for delivering (shaded) and assessing (ü) particular programme learning outcomes.

Level	Study module/unit	Programme outcomes							
		PA1	PA2	PB1	PB2	PC1	PC2	PD1	PD2
4	SCDV41 Programming and Software Fundamentals				ü			ü	
	SCDV42 Web Application Development			ü					
	SCDV43 Cyber Security Fundamentals	ü					ü		
	SCDV44 Network Fundamentals and Design					ü			
	SCDV45 Principles of Data Science		ü						
	SCDV46 Professional Skills and Industry Practices			ü					ü

Level	Study module/unit	Programme outcomes							
		PA3	PA4	PB3	PB4	PC3	PC4	PD3	PD4
5	SCDV51 Software Engineering					ü			
	SCDV52 Full-Stack Development	ü							ü
	SCDV53 Cyber Incident Response				ü		ü		
	SCDV54 Network Infrastructure Management			ü					

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	SCDV55 Application of Emerging Technologies		ü						ü
	SCDV56 Team Project and Industry Experience				ü			ü	

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Level	Study module/unit	Programme outcomes							
		PA5	PA6	PB5	PB6	PC5	PC6	PD5	PD6
6	SCDV61 Secure Software Design			ü		ü			
	SCDV62 Human Computer Interaction and User Experience	ü					ü		
	SCDV63 System Penetration and Ethical Hacking		ü						
	SCDV64 Cloud Infrastructure Design and Deployment				ü				ü
	SCDV65 Individual Capstone Project		ü	ü	ü	ü	ü	ü	ü

Module Specifications

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SCDV41 Programming and Software Fundamentals
Module Specification

1. Factual information			
Module title	SCDV41 Programming and Software Fundamentals		
Module tutor	Jenetha James	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
This module introduces the subject of programming and software engineering. It will cover areas of software design and implementation using modern design techniques, languages and environments. The student will gain the practical skill and knowledge to be able to design and implement software programs using object orientated programming.

3. Aims of the module
• To introduce students to a range of contemporary techniques in the development of software solutions including design, development, testing and documentation. • To enable students to respond to practical problems and develop solutions using industry standard practices in software development. • To develop students' creative problem solving for solutions to problems using a range of tools and techniques.

4. Pre-requisite modules or specified entry requirements
No

5. Is the module compensatable?
Yes

6. Are there any PSRB requirements regarding the module?
No

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7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Examine the contemporary techniques for design, developing testing, evaluation and documenting software systems from specifications and scenarios, using agreed standards and practices.	PA1	Lectures Practical workshops Case studies Digital learning using online platforms (such as Cisco Netacad, Microsoft Learn and AWS Training and Certification)

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Demonstrate effective judgement and adaptability in the selection of tools and techniques to provide logical solutions.	PB2	Lectures Practical workshops Case studies

C. Practical and professional skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to:		Lectures

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C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
C1 Use a range of programming tools and techniques to produce solutions to computational problems, using high-quality code and industry standard practices.	PC1	Practical workshops Case studies

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Evaluate different approaches when independently solving computational problems.	PD1	Lectures Practical workshops Case studies Digital learning using online platforms Microsoft Learn and AWS Training and Certification

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for software design, development and testing, which include techniques such as: data types; data type conversions; operators (mathematical and logical); strings/string handling; programming concepts/structures (sequence, selection and iteration); arrays (single and two dimensional) and data structures; validation and error handling; classes; objects; methods and overloading methods; inheritance; encapsulation; polymorphism, software development methodologies and software analysis, design and testing.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy:

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9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Programming Portfolio – Students assemble a portfolio of completed programming solutions originating from provided examples and personal experience Software Artefact and Technical Documentation – Students design, develop and test an object-orientated software solution for given requirements with accompanying technical documentation. Students must pass each assessment element to achieve a grade in the module				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Programming Portfolio	50%		%	C1, D1
Software Artefact and Technical Documentation	50%		%	A1, B1

10. Teaching staff associated with the module
Name and contact details
Jenetha James (Email JamesJE@btc.ac.uk)

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11. Key reading list				
Author		Title	Publisher	Location
Greene, J and Stellman, A.		Head First C# 4th Edition	O'Reilly Media	
McGrath, M.		C# Programming in Easy Steps	In Easy Steps Limited	
Clark, N		C#: A Detailed Approach to Practical Coding	CreateSpace Independent	
Haunts, S.		A Gentle Introduction to Agile Software Development	Stephen Haunts Limited	
Price, M		C# 8.0 and .NET Core 3.0	Packt Publishing	

12. Other indicative text (e.g. websites)

S

https://www.tutorialspoint.com/csharp/ https://docs.microsoft.com/en-us/dotnet/csharp/tutorials/intro-to-csharp/ https://csharp-station.com/ Microsoft Learn AWS Training and Certification

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

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SCDV42 Web Application Development
Module Specification

1. Factual information			
Module title	SCDV42 Web Application Development		
Module tutor	Andrew Maries	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module will facilitate the development of an awareness and understanding of the professional, technical and creative skills required to design and construct effective web applications to a client specification. In this module students will not only develop professional front-end web development skills, but also essential professional skills. Students will work on a live brief with a real-life client developing their industry practices and professional skills.

3. Aims of the module

- To introduce students to the business environment and completive advantage and how to communicate professionally with clients.
- To enable students to manage client requirements and fully evaluate the performance and suitability of web applications.
- To develop skills for students to plan, design, develop and evaluate a web application.

4. Pre-requisite modules or specified entry requirements

No

5. Is the module compensatable?

No

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Demonstrate the use of web applications for innovation and competitive advantage within business scenarios.	PA1	Lectures Practical workshops Case studies Digital learning using online platforms Microsoft Learn and AWS Training and Certification

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Select contemporary web development tools and frameworks for use in the design and development of a web-based solution.	PB1	Lectures Practical workshops Case studies

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Use a range of tools and techniques to effectively develop, test and evaluate a solution to a complex web-based problem; and examine the relationship between these stages.	PC1	Lectures Practical workshops

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for web application development, requirements analysis and process improvement tasks, design principles and web application design tools and methods. These techniques, tools and methods could include HTML, CSS, client-side scripting and CSS frameworks. Web application analysis methods that should be covered within the module include measuring web application performance; testing web applications and evaluating a web application. Transferable and professional content includes an understanding of internal and external business environment; business and client communication; meeting business and client needs; client management and professional presentation skills.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Website Analysis Presentation – Students undertake analysis of a given website using technical methods and techniques and produce realistic recommendations for improvement. Students must then give a 15 minute presentation on their technical recommendations with accompanying references. Website Artefact and Technical Documentation – Students design and develop a web application with a focus on creating an engaging user experience following modern design principles and utilising current web technologies and frameworks, with accompanying technical documentation. Students must pass each assessment element to achieve a grade in the module

Assessment Task	Weighting	Week submitted	Grading (Pass / Fail / %)	Module Learning Outcome(s) the assessment task maps to
Website Analysis Presentation	50%		%	A1, B1
Website and Technical Documentation	50%		%	C1

10. Teaching staff associated with the module
Name and contact details
Andrew Maries (mariesa@ucscollegegroup.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Duckett, J.	2	HTML and CSS: Design and Build Websites	Wiley	
Duckett, J.	2	JavaScript and JQuery: Interactive Front-End Web Development	Wiley	

12. Other indicative text (e.g. websites)
https://www.w3schools.com/
https://www.coursera.org
https://www.html5rocks.com/en/
https://www.khanacademy.org/
https://www.lynda.com/
https://ocw.mit.edu/index.html

13. List of amendments since last (re)validation

Area amended	Details	Date Central Quality informed

SCDV43 Cyber Security Fundamentals
Module Specification

1. Factual information			
Module title	SCDV43 Cyber Security Fundamentals		
Module tutor	Richard Everard	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
This module is designed to introduce cyber security fundamentals, by working from the fundamentals of cyber security, through to the implementation within the internet and industry. Students will develop their skills through written and practical assessment, where they will explore common cybersecurity threats, alongside the tools and practices used to mitigate the effects of an attack.

3. Aims of the module
• To introduce students to the fundamental concepts of cyber security and the common types of cyber threat actors and attack vectors. • To develop an understanding of the main mitigation tools and techniques prevalent in networking and cyber defence and evaluate their effectiveness. • To apply the fundamental knowledge to an analysis of a real-world scenario and perform a risk assessment including evaluation of available software packages and hardware solutions

4. Pre-requisite modules or specified entry requirements
None

5. Is the module compensatable?
Yes

6. Are there any PSRB requirements regarding the module?
No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Explain the fundamental concepts of cyber security, the common types of cyber threat actors and attack vectors including the exploitation of user based vulnerabilities and software exploits.	PA1	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Appraise the effectiveness of the main mitigation tools and techniques prevalent in networking and cyber defence.	PB1	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Demonstrate the use of a range of mitigation tools and industry practices and undertake a security assessment of for a simple IT system and propose resolution advice.	PC2	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge and understanding of core concepts of Cyber Security including the CIA Triad, non-repudiation, types of threat actors and common attack vectors. In addition, the concepts of physical security, secure network management and user security issues will be explained and explored. The module will also develop understanding of the main mitigation processes, practices and tools and evaluate their effectiveness in combating the attack actors and vectors including intrusion detection systems, unified threat management systems, user policies, physical security practices and the use of active network defences to protect systems and data. The module will develop practical skills in the secure setup and configuration of common network operating systems including Windows and Linux based systems and the installation, configuration and evaluation of common software and hardware protection methods. Finally, the module will develop skills to perform a security assessment of a simple IT system and recommend measures to enhance the protection of the system and data.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes

Assessment Strategy:

Cyber Security Concepts and Mitigation Methods. Students research and present a 15 minute seminar on the fundamental concepts of cyber security including the common cyber security actors and attack vectors accompanied by fully referenced research notes.

Cyber Security Risk Assessment and practical demonstration: Students perform a complete cybersecurity risk assessment and propose resolution advice in response to a selected case study along with a practical demonstration of the implementation of software tools included in their resolution advice. The submission will include a fully referenced report including the cyber security assessment and resolution advice and a demonstration of the software tools being recommended.

Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Cyber Security Concepts and Mitigation Methods	40%		%	A1, B1
Cyber Security Risk Assessment and practical demonstration:	60%		%	C1

10. Teaching staff associated with the module
Name and contact details
Richard Everard everardr@btc.ac.uk

11. Key reading list				
Author		Title	Publisher	Location
Tanenbaum, A, Feamster, N and Wetherall, D.		Computer Networks, Global Edition	Pearson	
Bonaventure, O		Computer Networking: Principles, Protocols and Practice	Open Access	Online Open-access
Diogenes, Y and Ozakya, E.		Cybersecurity – Attack and Defence Strategies	Packt	

12. Other indicative text (e.g. websites)
https://www.netacad.com/

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV44 Network Fundamentals and Design
Module Specification

1. Factual information			
Module title	SCDV44 Network Fundamentals and Design		
Module tutor	Richard Everard	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module is designed to introduce the fundamentals of computer networks and their implementation within the internet and industry. Students will develop their skills through written and practical assessment, where they will explore industry network design principles and implement those principles, in a simulated and hands-on practical labs. The unit will reference content in SCDV43 Cyber Security Fundamentals to address the issues relating to secure design of network systems.

3. Aims of the module

- To introduce students to the fundamental building blocks and typical architectures of computers, networks and the Internet.
- To develop an understanding the main features of routing and Internet network protocols and how they are used to manage the flow of traffic in local and wide area networks.
- To develop skills in the plan, design, build, test and demonstration of a simple network.

4. Pre-requisite modules or specified entry requirements

SCDV43

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Apply knowledge of the fundamental concepts of computer networks to their use in typical architectures of computers, networks and the Internet.	PA1	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Appraise the main features of routing and Internet network protocols in use, their purpose and relationship to each other with reference to both OSI and TCP/IP models.	PB1	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Implement a range of tools and techniques plan, design, construct and test a simple network to a requirement specification.	PC1	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for network planning, design and building, including the OSI and TCP/IP network models, namely the data link layer, physical and logical topologies, IP-based networks, including network convergence, addressing (DHCP) and address versioning, static and dynamic routing, including OSPF. In addition, basic switching and routing concepts and configuration will be analysed, alongside widely used network protocols, including their features, purposes, benefits and potential vulnerabilities. Industry standard design methodologies will be explored and applied to efficient network design, implementation and maintenance.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes

Assessment Strategy:

Network Simulation: Students produce a network simulation using industry standard tools which demonstrates the fundamental concepts of computer networking.

Practical Network Demonstration: Students specify, build and test a simple network using physical equipment to meet a set of requirements and demonstrate its operation in a live session.

Students must pass each assessment element to achieve a grade in the module

Assessment Task	Weighting	Week submitted	Grading (Pass / Fail / %)	Module Learning Outcome(s) the assessment task maps to
Network Simulation	50%		%	A1, B1
Network Infrastructure Design and Build	50%		%	C1

10. Teaching staff associated with the module
Name and contact details
Richard Everard everardr@ucs.ac.uk

11. Key reading list				
Author		Title	Publisher	Location
Kurose, J and Ross, K.		Computer Networking: A Top-Down approach, Global Edition	Pearson	
Tanenbaum, A, Feamster, N and Wetherall, D.		Computer Networks, Global Edition	Pearson	
Bonaventure, O		Computer Networking: Principles, Protocols and Practice	Open Access	Online Open-access

12. Other indicative text (e.g. websites)
https://www.netacad.com

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV45 Principles of Data Science
Module Specification

1. Factual information			
Module title	SCDV45 Principles of Data Science		
Module tutor	Jenetha James	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module is designed to introduce the principles of Data Science and their application to a range of industries beyond computing areas. The module will develop knowledge of data life cycles, data structures and databases and the skills required to clean, manage and process data to produce information for decision making. The module will also explore the use of AI and Machine learning in data science, as well as the legal and ethical issues surrounding the obtaining, processing, storage and transfer of data in modern connected systems.

3. Aims of the module

- To develop knowledge of the principle of data life cycles and fundamentals of data, data structures and databases.
- To develop knowledge of the security, legislation, policies, and procedures for organisational data.
- Apply machine learning skills to the processing of datasets and the output of valid information

4. Pre-requisite modules or specified entry requirements

No

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Communicate the concepts and principles of the data lifecycle and the fundamentals of data, data structures and databases.	PA2	Lectures Seminars Case studies Online learning platforms

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: B1 Review the impact of security policies and legislation for managing organisational data in a domain context.	PB2	Lectures Seminars Case studies Online learning platforms

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Employ database and machine learning tools and techniques to the processing of a dataset and the output of valid information from the dataset	PC1	Practical workshops Case studies

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Develop and apply appropriate life-long professional skills including presenting to an audience.	PD2	Practical workshops Case studies

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques within databases and data management. Content should typically include the characteristics of data and information, normalisation of data, the systems development process, relational databases, systems analysis, process modelling, data modelling and the overall design and implementation of a relational database as well as the use of AI and machine learning and their application to the discipline of data science and automation of data systems. Practical skills in database development, Structured Query Language (SQL) and Python for machine learning should also be covered in the module, as well as the ethical, security and legislative considerations when storing and managing data.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Data Lifecycle Presentation: Students produce a 15 minute presentation with referenced notes, that explains the principles of databases and the data lifecycle, quality and ethical issues within data management and review the impact of security policies and legislative concerns when managing data within a domain context. Data Management Tools Demonstration: Students demonstrate the use of a simple relational database and machine learning tools in the processing, organisation and output of data from a given dataset along with an accompanying technical documentation. Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Data Lifecycle Presentation:	60%		%	A1, B1
Data Management Tools Demonstration	40%		%	C1, D1

10. Teaching staff associated with the module
Name and contact details
Jenitha James (Email: JamesJE@ucscollegegroup.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Silberschatz, A., Korth, H., and Sudarshan, S.	2	Database Systems Concepts (7th Ed)	McGraw-Hill	
Raschka, S and Mirjalili, V.	2	Python Machine Learning: Machine Learning and Deep Learning with Python, scikit-learn, and TensorFlow 2, 3rd Edition	Packt	
Connolly, T., Begg, C.	2	Database Systems, a practical approach to Design, Implementat	Pearson	

11. Key reading list				
Author	Y	Title	Publisher	Location
		ion and Managemen t		

12. Other indicative text (e.g. websites)
https://www.w3schools.com/sql/ https://dev.mysql.com/doc/ https://owasp.org/www-project-proactive-controls/v3/en/c8-protect-data-everywhere https://skillsforall.com

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV46 Professional Skills and Industry Practices
Module Specification

1. Factual information			
Module title	SCDV46 Professional Skills and Industry Practices		
Module tutor	Jenitha James	**Level**	4
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
This module introduces professional skills and industry practices including computing and IT business practices and ethics. The module is also intended as an introduction to professional and academic expectations including academic writing, research and referencing.

3. Aims of the module
• To develop student's awareness of computing and IT industry practices. • To develop and maintain a digital portfolio to demonstrate professional capabilities and achievements. • To develop life-long professional and academic skills.

4. Pre-requisite modules or specified entry requirements
No

5. Is the module compensatable?
No

6. Are there any PSRB requirements regarding the module?
No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Review the processes and practical skills employed across the software development lifecycle.	PA2	Lectures Seminar discussions Case studies

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Appraise industry and business practices that support the analysis, design, development, testing and evaluation of computing and digital solutions.	PB1	Lectures Seminar discussions Case studies

C. Practical and professional skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: C1 Identify and appraise appropriate practices and effective solutions for professional, ethical and legal issues within the computing and digital sector including equality diversity and inclusion (EDI).	PC2	Lectures Practical workshops

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Develop and apply appropriate life-long professional skills through reflection and recording professional capabilities and achievements.	PD2	Lectures Seminar discussions Case studies Practical workshops Digital learning using online platforms (such as Cisco Netacad, Microsoft Learn and AWS Training and Certification)

8. Indicative content.
Develop knowledge, understanding, practical skills and industry practices by working within the computing industry, including common development methodologies and frameworks; computing and IT business practices and project management; professional practice and codes of conduct and the legal, social, ethical and professional issues in Computing.

8. Indicative content.
The module should also enable the improvement of teamwork and collaboration through maintaining a portfolio, reflecting on and recording professional capabilities and achievements; time management; online image and social media. Professional and academic skills, including literature searching and research skills; academic report writing skills and referencing is also key content within this module.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes

Assessment Strategy:

Digital Portfolio – Students develop and maintain a digital portfolio to demonstrate their professional capabilities and achievements.

Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Digital Portfolio	100%		%	A1, B1, C1, D1

10. Teaching staff associated with the module
Name and contact details
Jenitha James (Email: JamesJE@btc.ac.uk)

11. Key reading list				
Author		Title	Publisher	Location
Cottrell, S.	2	Skills for success: personal development and employability	Houndmills	

12. Other indicative text (e.g. websites)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV51 Software Engineering
Module Specification

1. Factual information			
Module title	SCDV51 Software Engineering		
Module tutor	Jenetha James	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module builds on SCDV41 Programming and Software Fundamentals. The module is intended to further develop software and programming skills with a particular focus on the production of engineered software solutions that meet business and technical requirements. The module will focus on specific software engineering principles and methods as well as given a platform for the further develop of programming skills.

3. Aims of the module

- To develop students' awareness of business and technical requirements when developing software solutions.
- To develop students' technical skills in advanced programming principles including design patterns and algorithms.
- To provide students with the understanding and applicable skills to operate at all stages of the software development lifecycle in line with professional practices

4. Pre-requisite modules or specified entry requirements

SCDV41 Programming and Software Fundamentals

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Identify how to operate at all stages of the software development lifecycle and how teams work efficiently to develop software solutions embracing agile and other development approaches.	PA3	Lectures Seminar discussions Case studies

B. Cognitive skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module students will be expected to: B1 Analyse business and technical requirements to select and specify appropriate software solutions.	PB4	Lectures Seminar discussions Case studies Practical workshops

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Design, implement, test, and debug effective software to meet requirements using contemporary methods including agile development and contemporary software development languages and manage the deployment of software solutions to end users.	PC3	Lectures Seminar discussions Case studies Practical workshops

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for advanced software design, development and testing, which include principles and practices of software engineering and operating within all stages of the system development lifecycle. The module will develop skills and knowledge in implementation, evaluation and selection of advanced data structures including vectors, maps and binary trees. The fundamentals of algorithms, including searching and sorting, will be analysed, as well as evaluating the space and time complexity of algorithms and data structures using Big O notation. Software engineering principles and concepts should be explored in depth and include software development practices and principles (SOLID) and design/architecture patterns including MVC; secure coding principles and industry practices; version control and management and configuring and deploying software solutions.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Case Study Report – Students produce an accurately referenced research report on how to operate at all stages of the software development lifecycle for given business and technical requirements and explore how teams work efficiently to develop software solutions within an agile development and other approaches. Software Artefact and Technical Documentation – Students use object-oriented languages, concepts and frameworks to design, implement, test, debug and deploy a software application and produce accompanying technical documentation. Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Case Study Report	40%		%	A1, B1
Software Artefact and Technical Documentation	60%		%	C1

10. Teaching staff associated with the module
Name and contact details
Jenetha James (Email: JamesJE@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Farley, D.	2	Modern Software Engineering: Doing What Works to Build Better Software Faster	Addison-Wesley Professio	

11. Key reading list				
Author	Y	Title	Publisher	Location
			nal	
Richards, M. and Ford, N.	2	Fundamentals of Software Architecture: An Engineering Approach	O'Reilly	

12. Other indicative text (e.g. websites)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV52 Full Stack Development
Module Specification

1. Factual information			
Module title	SCDV52 Full Stack Development		
Module tutor	Andrew Maries	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
The module builds on SCDV42 Web Application Development.

3. Aims of the module
• To develop students' understanding of user experience design and requirements engineering. • To develop students' understanding of the principles of requirements engineering and the importance of managing requirements. • To develop students modelling and analysis techniques. • To demonstrate skills in the development of a full-stack web application from user driven requirements.

4. Pre-requisite modules or specified entry requirements
SCDV42 Web Application Development

5. Is the module compensatable?
Yes

6. Are there any PSRB requirements regarding the module?
No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Understand and appraise the tools and techniques used in user experience (UX) design and requirements engineering.	PA3	Lectures Seminar discussions Case studies

B. Cognitive skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module students will be expected to: B1 Analyse business problem scenarios and define requirements through the application of modelling and analysis techniques to develop a clear, complete, unambiguous and testable requirements specification.	PB3	Lectures Seminar discussions Case studies

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Design, develop, test and evaluate a suitable full stack web application for a required specification using user experience (UX) assessment methods.	PC3	Lectures Seminar discussions Practical workshops

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Communicate designs and requirements using a variety of media and a range of methods, appropriate to a given type of audience.	PD4	Lectures Seminar discussions Practical workshops

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for website design, development and testing, which include front end development, HTML, CSS, web standards, CSS compression and optimisation; web-based scripting languages; in depth introduction to languages such as PHP, ASP, etc. Server-side scripting languages such as C# and PHP should be used in the processing of client-side forms using server-side scripts; connecting web pages to databases; dynamic web content, database-driven. The module will enable the development of typical web-based server-side applications, e.g. online shopping, content management which include the integration of external and custom APIs. Other full-stack web principles that could be covered within the module include UX design; information architecture; interaction design; usability; building and testing; determining users and UX modelling.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Case Study review and video demonstration – Students respond to a choice from a range of case studies with a prototype for a final version of a web solution. They will produce a video demonstration of their solution which critically analyses the tools and techniques available in UX design and requirements engineering. Web Application and Technical Documentation – Students develop a full-stack web application using contemporary web frameworks with accompanying technical documentation. Students must pass each assessment element to achieve a grade in the module

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Case Study Review and Video	50%		%	A1, B1
Web Application and Technical Documentation	50%		%	C1, D1

10. Teaching staff associated with the module
Name and contact details
Andrew Maries mariesa@btc.ac.uk

11. Key reading list				
Author	Y	Title	P	Location
Duckett, J.	2	HTML and CSS: Design and Build Websites	W	

11. Key reading list				
Author	Y	Title	P	Location
Flanagan. D	2	JavaScript: The Definitive Guide	O	
Soegaard, M.	2	The Basics of User Experience Design: A UX Design Book by the Interaction Design Foundation	S	

11. Key reading list				
Author	Y	Title	P	Location
Duckett, J.	2	PHP & MySQL: Server-side Web Development	W	

12. Other indicative text (e.g. websites)
https://www.khanacademy.org/ https://www.lynda.com/ https://ocw.mit.edu/index.html https://www.w3schools.com/ https://www.html5rocks.com/en/

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV53 Cyber Incident Response
Module Specification

1. Factual information			
Module title	SCDV53 Cyber Incident Response		
Module tutor	Richard Everard	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module is designed to build on the basic principles of SCDV43 Cyber Security Fundamentals to study the industry approaches to responding to a cyber threat incident. By using a range of case studies and industry tools and practices, students will learn the theory of cyber incident response and how it is put into practice. In addition, students will have the opportunity to experience live cyber response scenarios and be able to perform post-incident reviews and recommend remedial action to be taken as a result of lessons learned.

3. Aims of the module

- To introduce the concept of cyber incident response management and the common tools and practices used to manage an ongoing cyber security incident.
- To develop skills in preparing a playbook for defending IT systems against cyber threats including preventative measures, active response techniques and forensic methods for post incident analysis.
- To provide simulated scenarios that enable students to experience cyber incident scenarios and practice skills in managing such incidents using industry tools and practices.

4. Pre-requisite modules or specified entry requirements

SCDV43 Cyber Security Fundamentals

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Identify the core concepts involved in cyber incident response and appraise their use in a coordinated response to a cyber incident	PA4	Lectures Practical demonstrations Seminars Case studies Digital learning using Cisco Netacad and TryHackMe

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: B1 Design a playbook for defending an IT System against a range of cyber threats which encompasses preventative measures, active response techniques and forensic methods for post incident analysis.	PB4	Practical workshops Seminars Case studies Digital learning using Cisco Netacad and TryHackMe

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Demonstrate practical skills in managing cyber security incidents using industry tools and practices in response to a simulated live cyber incident scenario.	PC4	Practical demonstrations Case studies Digital learning using Cisco Netacad and TryHackMe

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge of the core concepts of cyber threat management including the central domains of preparation, identification, containment, eradication, recovery and review. Stages of the Cyber Kill Chain – Reconnaissance, Weaponization, Delivery, Exploitation, Installation, C2 (Command and control) and Actions on Objectives – and how these are countered using planned cyber threat management tools and practices. Experience using industry tools including SIEM (Security Information and Event Management) Systems, IDS (Intrusion Detection Systems), IPS (Intrusion Prevention Systems), EDR (Endpoint Detection and Response) solutions, Forensic tools and incident management platforms. Knowledge of industry best practices in relation to cyber incident response including communication, documentations, coordination, continuous improvement, legal and regulatory compliance and threat intelligence integration.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Cyber Kill Chain Analysis: Students analyse the Cyber Kill Chain process and how the corresponding cyber threat management domains are used to mitigate actions as a part of the kill chain. Cyber Incident Response Time Constrained Test**:** Students respond to an extended cyber incident in a live simulated environment using industry recognised tools and practices and take part in a post-event review on the incident including recommendations based on lessons learned. Simulation is a small group assessment with a post-event review which includes individual reflection as well as a review of group performance. Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Cyber Kill Chain Report	40%		%	A1
Cyber Incident Response	60%		%	B1, C1

10. Teaching staff associated with the module
Name and contact details
Richard Everard everardr@ucscollegegroup.ac.uk

11. Key reading list				
Author	Y	Title	Publisher	Location
Sutton, D.	2	Cyber Security: A Practitioner's Guide	BCS: The Chartered Institute for IT	
Sheward, M.	2	Security Operations in Practice	BCS: The Chartered Institute for IT	
Taylor, A., Alexander, D., Finch, A. and Sutton, D.	2	Information Security Management Principles: Third edition	BCS: The Chartered Institute for IT	

12. Other indicative text (e.g. websites)
Netacad.com BCS.org

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV54 Network Infrastructure Management
Module Specification

1. Factual information			
Module title	SCDV54 Network Infrastructure Management		
Module tutor	Richard Everard	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This unit builds directly on SCDV44 Network Fundamentals and Design to study the implementation of the fundamental principles to the management of network infrastructures including traditional in-house hosted systems and cloud deployed solutions. The focus of the unit will be on the application of core computer network principles to the management of a network as a whole including the use of tools for automation of common network tasks. Students will develop their skills through design-based projects and the setup and ongoing management of a networked system using standard industry tools and infrastructure level OS including different server management packages.

3. Aims of the module

- To develop student's ability to apply the fundamental concepts of networking as it pertains to their use in managed network systems across a range of different scenarios
- To be able to provide a comparison of different network management strategies and develop skills in the use of tools to deploy and manage modern computer networks
- To demonstrate the skills required to implement and manage a centrally managed IT system including the use of automation in network management.

4. Pre-requisite modules or specified entry requirements

SCDV44 Network Fundamentals and Design

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Critically evaluate how core networking concepts relate to their use in the management of modern networked IT systems	PA4	Lectures Practical demonstrations Seminars Case studies Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: B1 Evaluate different network management strategies and their appropriateness to common network design paradigms.	PB3	Lectures Practical workshops Seminars Case studies Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Demonstrate skills in the use of industry standard tools and practices in the deployment and management of a live networked system	PC4	Practical workshops Seminars Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
Develop knowledge and understanding of the key principles of networking and how they apply to the management of a modern networked system including: topologies, protocols, security, scalability, performance monitoring, redundancy, high availability, QoS (Quality of service) and virtualised systems. Practice the use of industry tools used for network monitoring, configuration management, security, collaboration, virtualisation and ticketing systems on both Windows and Linux based server systems. Apply software development skills in the automation of network tasks including scripting and appropriate programming paradigms and tools. Demonstrate skills in the application of industry standard best practices including auditing, documentation, change management, training and skills development, incident response planning, capacity planning, compliance and disaster recovery.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Network Management Strategy Evaluation: Students research and present their findings critically evaluating network management approaches and how they are underpinned by fundamental network principles and limitations. Network Management Mini Project: Students document their planning, implementation and management of a live client-server networked system over an extended period through a combination of planning documentation and ongoing support records. The students will be need to demonstrate their skills in using network management tools and practices, providing and ongoing record evidencing their actions taken to manage the system including the use of automation and QoS improvements. Mini-project is a group assessment with individual contributions assessed through ongoing support records. Students must pass each assessment element to achieve a grade in the module

Assessment Task	Weighting	Week submitted	Grading (Pass / Fail / %)	Module Learning Outcome(s) the assessment task maps to
Network Management Strategy Presentation	40%		%	A1, B1
Network Management Mini Project	60%		%	C1

10. Teaching staff associated with the module
Name and contact details
Richard Everard (everardr@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Kurose, J and Ross, K.	2	Computer Networking: A Top-Down approach, Global Edition	Pearson	
Limoncelli, T., Hogan, C. and Chalup, S.	2	The Practice of Systems and Network Administration: DevOps and other Best Practices for Enterprise IT, Volume 1 (3rd Edition)	Addison-Wesley Professio	

11. Key reading list				
Author	Y	Title	Publisher	Location
			n a l	
Bonaventure, O	2	Computer Networking: Principles, Protocols and Practice	Ope r A c c e s s	Online Ope n- acce ss

12. Other indicative text (e.g. websites)
Netacad.net

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV55 Application of Emerging Technologies
Module Specification

1. Factual information			
Module title	SCDV55 Application of Emerging Technologies		
Module tutor	Jenitha James	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

In this module, students will have the opportunity to understand and analyse a range of emerging and immersive technologies, developing their technical skills through a practical project. The unit will cover a range of core emerging technologies which could include Internet of Things (IoT), Extended Reality (XR), Artificial Intelligence (AI) and Machine Learning, considering their features, applications and implications for computing and other industries. A core part of the module will be the selection of a technology by the student to develop a mini project related to that technology.

3. Aims of the module

- To allows students to explore and analyse the principles, purpose and techniques of a range of emerging and immersive technologies.
- To evaluate different emerging technologies and develop their use for computing and other industries.
- To develop students' project management and professional communication skills.

4. Pre-requisite modules or specified entry requirements

SCDV41 Programming and Software Fundamentals

5. Is the module compensatable?

No

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: A1 Appraise the principles, applications, and ethics of a range of emerging technologies.	PA4	Lectures Seminars Case Study Analysis

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to:		

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module students will be expected to: C1 Develop, test and evaluate a technological solution utilising emerging technologies.	PC4	Lectures Practical Workshops Open lab time

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module students will be expected to: D1 Work independently to develop an emerging technologies project, whilst managing time and other resources effectively.	PD4	Lectures Practical Workshops Open lab time

8. Indicative content.
The module will develop knowledge and understanding in the differing and contemporary uses for Emerging Technologies including robotics, artificial intelligence and machine learning, drones; blockchain technologies including cryptocurrencies, Internet of Things, smart homes, 5G and quantum computing. Particular focus will be put on the application of such technologies, and the ethics, implications and concerns regarding their implementation. The module will also give hands on practical work with a range of emerging tech, both physical and software based, including: IoT devices, basic robotics, extended reality (XR), machine learning tools and 3D Printing. The unit will culminate in a mini-project where students have the opportunity to develop a solution to a problem using emerging technologies as part of the solution.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Critical Review – Students are required to undertake a critical review of the use of emerging technologies across different industries including ethical concerns surrounding the use of emerging technologies. Emerging Technologies Project and Demonstration: Students design and develop an appropriate emerging technology project with accompanying and appropriate technical documentation. They will be required to demonstrate their solution as a live system (in-person or via live link) Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Case Study Report	30%		%	A1
Emerging Technologies Project and Demonstration	70%		%	C1, D1

10. Teaching staff associated with the module
Name and contact details
Jenitha James (Email: JamesJE@ucscollegegroup.ac.uk)

11. Key reading list				
Author		Title	Publisher	Location
Claudia Tom Dieck, M and Jung, T.	2019	Augmented Reality and Virtual Reality: The Power of AR and VR for Business	Springer International Publishing	Switzerland
Agarwal, A.	2018	Emerging Technology Trends - Frequently Asked Questions	Independent	Arizona
Khan, F and Anderson, J.	2021	Digital Transformation using Emerging Technologies	Independent	USA
Greengrd, S.	2021	The Internet of Things, revised and updated edition (The MIT Press Essential Knowledge series)	MIT Press	

12. Other indicative text (e.g. websites)
https://unity3d.com/learn/tutorials https://aframe.io/ Internet of Things (IoT) Tutorial (tutorialspoint.com)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV56 Team Project and Industry Experience
Module Specification

1. Factual information			
Module title	SCDV56 Team Project and Industry Experience		
Module tutor	Jenitha James	**Level**	5
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module builds on SCDV46 Professional Skills and Industry Practices. The module allows for students to collaborate in the development of a computing and digital technologies project. Students will implement project management techniques in the delivery of a computer-based project within a required timescale, in turn, facilitating the development of communication and interpersonal skills.

In addition, students will undertake, report and reflect upon a minimum 15-day individual industry experience placement. The placement will enable students to develop the qualities and transferrable skills necessary for working in the computing and digital technologies industry including the ability to apply their academic and professional practice in the real-world.

3. Aims of the module

- To develop students' skills in planning and managing a technology solutions project accurately consistent with business needs.
- To develop professional and ethical standards involved in computing and digital technologies by the undertaking of an industry experience placement.
- To introduce the expectations of a computing and digital technologies project in preparation for the Level 6 individual project.

4. Pre-requisite modules or specified entry requirements

SCDV46 Professional Skills and Industry Practices

5. Is the module compensatable?

No

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Evaluate the use, management and deployment of computing and digital technologies solutions projects, understanding the issues of quality, cost and time for projects, including contractual obligations and resource constraints.	PA4	Lectures Seminars Case studies

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Analyse the key issues in a computing and digital technologies project and undertake research to understand previous relevant solutions.	PB4	Lectures Seminars Case studies

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Develop comprehensive professional and ethical standards involved in planning and managing a computing and digital industries project and employ appropriate professional, ethical and industry practices in the undertaking of an industry experience placement.	PC4	Lectures Practical workshops Seminars Case studies

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Work both independently, and co-operatively as a member of a project team to generate computing and digital technologies solutions and communicate this to specialist and non-specialist audiences.	PD3	Lectures Practical workshops Seminars Case studies

8. Indicative content.
Students are required to work as part of collaborative team approved by the module tutor. Each team is required to produce a written proposal for a relevant project idea of their own choosing or from a published list. The project must be relevant to the Computer and Digital Technologies industry. The written proposal

8. Indicative content.
will be submitted as team, but each student will be assessed on their own individual contribution. This will be assessed by the module tutor and carries 10% weighting of the overall mark for this module. The written project proposal will address the nature of the project and any ethical considerations. Each proposal will then be considered by an internal ethics panel for final approval. If the ethics panel is not satisfied with any aspect of the proposed project, conditions will be provided, and the proposal will need to be re-submitted to the panel before the project can proceed. On approval, the students will work collaboratively to produce their proposed Computer and Digital Technologies solution e.g. a software artefact, web application or cyber security assessment. On completion of the team project, each student is required to produce an individual project report on the final solution. This report is assessed individually. This will be assessed by the module tutor and carries 50% weighting of the overall mark for this module. Each project team will also be required to give a demonstrative presentation to peers and academic staff on their final projects, each student will be assessed on their own individual contribution to this presentation. This will be assessed by the module tutor and carries 20% weighting of the overall mark for this module. As part of this module each student is expected to undertake a minimum 15-days mandatory industry experience placement with a business operating within the Computer and Digital Technologies industry. This placement is undertaken individually and is independent of the collaborative team project. Each student must produce a reflective industry experience report. This will be assessed by the module tutor and carries 20% weighting of the overall mark for this module.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Project Proposal and report – Students identify a collaborative team project within the area of computing and digital technologies of their own choosing or from a published list. Each team is required to produce a written proposal. The written proposal will be submitted as team, but each student will be assessed on their own individual contribution. Students develop their solutions collaboratively and individually produce a reflective report on the team project and their own role in the project. This is assessed individually and must include a completed industry experience timesheet.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Team Presentation – Students demonstrate their final project to a panel giving a full demonstration of the functionality and effectiveness of the final project solution through a 15 min presentation. This is a group assessment. Students must pass each assessment element to achieve a grade in the module				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Individual Project Report	80%		%	B1, C1, D1
Team Presentation	20%		%	A1

10. Teaching staff associated with the module
Name and contact details
Jenetha James (Email: JamesJE@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Dawson, C.W.	2	The Essence of Computing Projects: A Student's Guide.	Prentice Hall	

11. Key reading list				
Author	Y	Title	Publisher	Location
Cottrell, S.	2	Dissertations and Project Reports: A Step by Step Guide (Palgrave Study Skills)	Macmillian	
Wysocki, R. K.	2	Effective Project Management: Traditional, Agile, Extreme	Wiley	

12. Other indicative text (e.g. websites)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV61 Secure Software Design
Module Specification

1. Factual information			
Module title	SCDV61 Secure Software Design		
Module tutor	Jenetha James	**Level**	6
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module challenges students to build on their existing software development skills and their knowledge of industry standard software engineering practices and apply them to the specific focus of the development of secure software applications. The module will explore the standards and protocols used in secure software design and apply those to the design, build and testing of a secure software artifact in line with industry standard quality assurance practices. This module builds on SCDV51 Software Engineering and has cross over links to SCDV63 Ethical Hacking.

3. Aims of the module

- To explore the utilisation of secure coding standards and practices including the concept of secure software design
- To develop students' skills in the application of secure software solutions and coding standards to the development process.
- To give students the opportunity to design, build and test a secure application with particular emphasis on secure design and subsequent security testing of the software.

4. Pre-requisite modules or specified entry requirements

SCDV51 Software Engineering

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Synthesise the core concepts, tools and practices involved in the development of secure software	PA5	Lectures Practical workshops Seminars Online Learning

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Critically analyse software coding standards and practices in relation to their use in development of secure software.	PB5	Lectures Practical workshops Seminars

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Utilise secure software development methodologies in the design, build and testing of a secure application in line with industry standard quality assurance practices	PC5	Practical workshops Seminars

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to:		

8. Indicative content.
During the module students will study the core concepts of secure software development including: Threat modelling, principles of least privilege, defence in depth, security by design, secure coding practices to avoid common vulnerabilities such as buffer overflows, injection attacks and insecure dependencies, secure communications, authentication and authorisation, input validation, error handling, audit trails and logging. The module will also include the use of application security testing tools including static, dynamic and interactive testing tools, dependency scanning and security linters. The module will also include the implementation of industry standard quality assurance tools and practices in the development of secure software. Finally, the unit will consider and put into practice the use of best practices including code reviews, patch management, incident response planning, secure DevOps and regulatory compliance.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Secure Software Development Toolkit: Students produce a fully referenced manual which identifies the core concepts, tools and practices involved in the development of secure software as well as analysing coding standards and practices as they relate to secure software design and development. The submission will be in the form of fully referenced manual. Software Artefact and Documentation: Students specify, design, build and test a piece of secure software for a specific scenario. They will be required to provide full technical documentation and demonstrate the security of the software using recognised tools and practices. The submission will be in the form of a video or live demonstration of the software testing accompanied by technical documentation on the software development including quality assurance documentation using industry standard practices. Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Secure Software Development Toolkit	50%		%	A1, B1
Software Artefact and Documentation	50%		%	C1

10. Teaching staff associated with the module
Name and contact details
Jenetha James (Email: JamesJE@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Pu	Location
Dooley, J.	2	Software Development, Design and Coding: With Patterns, Debugging, Unit Testing, and Refactoring	Ap	
Walkinshaw, N.	2	Software Quality Assurance: Consistency in the Face of Complexity and Change (Undergraduate Topics in Computer Science)	Sp	

12. Other indicative text (e.g. websites)
https://www.khanacademy.org/

https://www.lynda.com/ https://ocw.mit.edu/index.html

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV62 Human Computer Interaction
Module Specification

1. Factual information			
Module title	SCDV62 Human Computer Interaction		
Module tutor	Andrew Maries	**Level**	6
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules

This module is intended to build on the core principles of web design from SCDV42 Web Application Development and SCDV52 Full Stack Development to explore the principles behind development of highly functional and user-centred applications. The unit will study the principles of interface design required to make applications user-friendly and accessible as well as the technology required to make the design fully functional. The module will culminate in the design and deployment of an application in response to a client brief using modern and/or innovative UX solutions.

3. Aims of the module

- To review the principles of Human Computer Interaction (HCI) and user experience in relation to application development on a range of platforms
- To apply the principles of HCI to the design of an application which makes use of modern and emerging technology to enhance the user experience
- To equip the students with the skills to apply sophisticated judgement, critical thinking and research design when problem solving to create effective computational systems for complex problems and situations, with a high degree of autonomy.

4. Pre-requisite modules or specified entry requirements

SCDV52 Full Stack Development

5. Is the module compensatable?

Yes

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
By the end of the module students will be able to: A1 Critique the principles of modern Human Computer Interaction and how they relate to the concept of UX (User Experience) in application design	PA5	Lectures Seminars Case studies Digital learning using Coursera, Microsoft Learn and AWS Training and Certification

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
By the end of the module students will be able to:		

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
By the end of the module students will be able to: C1 Apply the principles of HCI to the development of an application which makes use of modern and emerging technology to enhance the user experience	PC6	Lectures Practical Workshops Digital learning using Coursera, Microsoft Learn and AWS Training and Certification

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
By the end of the module students will be able to: D1 Apply sophisticated judgement, critical thinking and research design when problem solving to create effective computational systems for complex problems and situations, with a high degree of autonomy.	PD6	Practical Workshops Seminars Case studies Digital learning using Coursera, Microsoft Learn and AWS Training and Certification

8. Indicative content.
Develop core knowledge of HCI and UX principles including UCD (User Centred Design), useability, design for UX, task analysis, interaction design, information architecture, prototyping and iterative design, accessibility, cognitive psychology, human factors affecting UX and the context of use. In addition, the module will cover the advanced application of design principles of complex scenarios involving HCI, the importance of advanced testing and feedback systems as well the integration of cognitive psychology into the development of a successful application. The application of emerging technologies including AR, VR, voice recognition and “deepfake” technology to application development. Hands-on experience with prototyping tools such as Adobe XD, Framer, Unity will also be covered. The module will focus on the utilisation of high-level design and complex problem-solving methods to create highly useable applications based on the skills acquired in prior units.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Human Computer Interaction Report: Students write a fully referenced report which critiques the principles of Human Computer Interaction making reference to currently accepted theory in the field. Optimised UX Application Development: Students design, develop and test a quality assured application that makes use of modern and/or emerging technologies to enhance the user experience in response to a specification. The application will be extensively tested and be accompanied by a full technical documentation including a user guide. Students must pass each assessment element to achieve a grade in the module

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Human Computer Interaction Report	40%		%	A1
Optimised UX Application Development	60%		%	C1, D1

10. Teaching staff associated with the module
Name and contact details
Andrew Maries (mariesa@ucscollegegroup.ac.uk)

11. Key reading list				
Author	Y	Title	Pu	Location
Steve Krug	2	Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability	Ne	

11. Key reading list				
Author	Y	Title	Pu	Location
Shlomo Benartzi	2	The Smarter Screen: What Your Business Can Learn from the Way Consumers Think Online	Pia	
Jenifer Tidwill, Aynne Valencia–brooks, Charles Brewer	2	Designing Interfaces	O′	

12. Other indicative text (e.g. websites)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV63 Ethical Hacking
Module Specification

1. Factual information			
Module title	SCDV63 Ethical Hacking		
Module tutor	Richard Everard	**Level**	6
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
This module builds on SCDV53 Cyber Incident Response. Learners will utilise their foundational and advanced knowledge previously attained in order to showcase specialist knowledge and skills in cyber security, specifically in relation to Ethical Hacking and System Penetration methodology. This culminates in the ability to act as a penetration tester and ethical hacker, using a wide variety of tools and techniques to fully evaluate vulnerabilities, threats and remedies within network security.

3. Aims of the module
• To enable students to engage with a range of techniques that will allow an ethical hacker or penetration tester to understand their role and responsibilities identify targets (physical, virtual and human) as a part of blue team/red team/purple team activities. • To enable students to probe systems and services for vulnerabilities before documenting the exploitable resources. • To evaluate protective mechanisms, appropriate to modern computer networks and software design practices.

4. Pre-requisite modules or specified entry requirements
SCDV53 Cyber Incident Response

5. Is the module compensatable?
Yes

6. Are there any PSRB requirements regarding the module?
No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Describe and critique the roles and responsibilities of an ethical hacker and penetration tester, with consideration for legal and ethical issues.	PA6	Lecturers Seminars Case Studies Digital learning using Cisco Netacad and TryHackMe

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Critically select appropriate tools and techniques that could be used to both attack and defend in given cyber security scenarios and interpret results from a range of tools and documenting findings in an appropriate manner.	PB6	Lecturers Seminars Case Studies Practical Work Digital learning using Cisco Netacad and TryHackMe

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Perform penetration testing as a member of the blue team/red team/purple team for a penetration testing service and produce detailed documentation of operations undertaken and the corrective measures needed to ensure future security.	PC6	Lecturers Seminars Case Studies Practical Work Digital learning using Cisco Netacad and TryHackMe

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Apply critical and thinking skills and using an analytical approach to ethical hacking and penetration testing.	PD6	Lecturers Seminars Case Studies Practical Work Digital learning using Cisco Netacad and TryHackMe

8. Indicative content.
Develop knowledge, understanding and practical skills in the differing and contemporary techniques for penetration testing and ethical hacking, which includes techniques such as ethical hacking and penetration testing as a career – the roles, responsibilities, ethical and legal considerations that one must consider. The tools and techniques required for effective penetration testing, such as foot-printing, reconnaissance, scanning, data access and exploitation techniques. The importance of documentation is crucial, and each of these techniques must be considered for their ethical and legal implications, as well as their effectiveness. Possible protection or mitigation mechanisms in place must also be understood and scouted. Reverse engineering, as well as the ability to break through wireless network encryption and firewalls, will be considered in relation to quick extrication with no trace. Legal/ethical context, foot printing, scanning, enumeration, sniffing, social engineering, application-level attacks, wireless networks, firewalls, network access control, traffic auditing, exfiltration techniques, anonymisation, reverse engineering.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Case Report – Students write a report which critically analyses the roles and responsibilities of members of the cybersecurity team in relation to a selected recent cyber incident case study. Practical and Reflective Review – Students carry out a blue team and red team ethical hacking and penetration testing exercise with accompanying reflective review. This is conducted as a group assessment with an individual reflective review. Students must pass each assessment element to achieve a grade in the module

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Case Report	30%		%	A1
Practical and Reflective Review	70%		%	B1 C1, D1

10. Teaching staff associated with the module
Name and contact details
Richard Everard everardr@ucscollegegroup.ac.uk

11. Key reading list				
Author	Y	Title	Pu	Location
Diogenes, Y and Ozakya, E.	2	Cybersecurity – Attack and Defence Strategies	Pac	

11. Key reading list				
Author	Y	Title	Pu	Location
Velu Kumar, V.	2	Mastering Kali Linked for Advanced Penetration (2nd Edition)	Pac	
Clark, B and Downer, N.	2	RTFM: Red Team Field Manual v2	Ind	

12. Other indicative text (e.g. websites)
https://www.khanacademy.org/ http://linux.wikia.com/wiki/Kali_Linux

https://ocw.mit.edu/index.html

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV64 Cloud Infrastructure Design and Deployment
Module Specification

1. Factual information			
Module title	SCDV64 Cloud Infrastructure Design and Deployment		
Module tutor	Richard Everard	**Level**	6
Module type	Taught	**Credit value**	20
Mode of delivery	Taught face-to-face		
Notional learning hours	200		

2. Rationale for the module and its links with other modules
This module builds directly on the foundations set by both SCDV44 Network Fundamentals and Design and SCDV54 Network Infrastructure Management and applies the principles to the deployment and management of modern cloud-based systems. The module will focus on the skills required to implement a cloud-based solution to paradigms previously studied as physical solutions and the benefits, challenges and ethical concerns involved in such deployments.

3. Aims of the module
• To appraise the core principles of cloud deployment solutions and how they relate to their real-world applications for both infrastructure management and software deployment • To demonstrate practical skills in the deployment of cloud-based network infrastructure and software solutions • To evaluate the ethical considerations of cloud deployment solutions in current and emerging innovative applications of the technology

4. Pre-requisite modules or specified entry requirements
SCDV54 Network Infrastructure Management

5. Is the module compensatable?
Yes

6. Are there any PSRB requirements regarding the module?
No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to:		

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: B1 Appraise the use of cloud based networked and software solutions in modern IT data systems	PB6	Lectures Seminars Case studies Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Deploy a cloud based network infrastructure solution and associated software packages in response to a client design	PC6	Practical workshops Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Critically evaluate the ethical considerations of an increasingly cloud based infrastructure paradigm for corporate and worldwide networked data systems	PD6	Lectures Seminars Case studies Digital learning using Cisco Netacad, Microsoft Learn and AWS Training and Certification

8. Indicative content.
Develop knowledge of principles involved in the deployment of cloud-based infrastructure solutions including scalability, reliability, security, performance optimisation, automation, cost optimisation, monitoring and logging, interoperability and vendor lock-in, compliance and governance and elasticity of systems. Practical experience in the use of major cloud development and deployment solutions which could include AWS (Amazon Web Services) Google Cloud or Microsoft Azure. Ethical considerations relating to cloud deployment including data privacy, security and confidentiality, worker rights, ethical use of AI and machine learning, surveillance culture, compliance, environmental impacts, accessibility and the digital divide.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes
Assessment Strategy: Cloud Systems Seminar: Students research and present a 20-minute seminar on the use of cloud-based solutions and the ethical considerations of such systems. The seminar will be accompanied by a fully referenced set of research notes for attendees of the seminar. Cloud Deployment Demonstration: Students plan, deploy and demonstrate a cloud-based infrastructure solution in response to a set brief. The demonstration will be done on the live system and be accompanied by a technical handover document. This is a group assessment with an individual demonstration and documentation. Students must pass each assessment element to achieve a grade in the module

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes				
Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Cloud Systems Seminar	40%		%	B1, D1
Cloud Deployment Demonstration	60%		%	C1

10. Teaching staff associated with the module
Name and contact details
Richard Everard (everardr@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Kurose, J and Ross, K.	2	Computer Networking: A Top-Down approach, Global Edition	Pearson	
Armstrong, J.	2	Migrating to AWS: A	O'Reilly	

11. Key reading list				
Author	Y	Title	Publisher	Location
		Manager's Guide		
Shukla, A., Patel, J., Panzade, K., and Sardana, H.	2	Cisco Cloud Infrastructure	Cisco Press	

12. Other indicative text (e.g. websites)
Netacad.net

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed

SCDV65 Individual Capstone Project
Module Specification

1. Factual information			
Module title	SCDV65 Individual Capstone Project		
Module tutor	Richard Everard	**Level**	6
Module type	Taught	**Credit value**	40
Mode of delivery	Taught face-to-face		
Notional learning hours	400		

2. Rationale for the module and its links with other modules

This individual project will provide students a platform to apply the knowledge and skills that they have acquired on the programme, in a scientific manner to enable the development of a substantial computing project and write a comprehensive dissertation style report.

Students will develop strategies allowing them to understand and practice problem solving with regard to inception, research, synthesis, realisation and evaluation. The module culminates in a final presentation of their computing project to a panel.

3. Aims of the module

- To enable students to become proficient in the extended application and manipulation of a range of tools, techniques and technologies in the production and delivery of a complex computing project.
- To fully plan and manage a self-developed design brief and final computer project in a professional manner with a final project artefact.
- To exercise and evaluate self-management skills in the context of industry standard processes and standards.

4. Pre-requisite modules or specified entry requirements

None

5. Is the module compensatable?

No

6. Are there any PSRB requirements regarding the module?

No

7. Intended learning outcomes		
A. Knowledge and understanding	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module, students will be expected to: A1 Appraise essential facts, concepts, theory, principles and practice in the development of a professional project proposal including a critical awareness of the professional, economic, social, environmental, moral and ethical issues involved in the design, development and deployment of computing and digital technologies solutions.	**PA6**	Lecture Seminars Practical workshops

B. Cognitive skills	**Programme Learning Outcome(s) this maps against**	**Learning and teaching strategy**
At the end of the module students will be expected to: B1 Develop and apply new creative techniques and processes in the development and application of problem solving strategies throughout the professional computing project process B2 Conduct specialist literature review in order to judge the reliability, validity and significance of evidence to support conclusions and/or recommendations in the design, production and evaluation of a computing asset.	**PB5** **PB6**	Lecture Seminars Practical workshops Tutorial

B. Cognitive skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy

C. Practical and professional skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: C1 Manage own learning and work independently with confidence, adhering to professional codes of conduct and applying the entrepreneurial skills required in the computing sector. C2 Examine, analyse and critically evaluate progress regularly in the form of a production log, reflecting upon strategies and methodologies appropriately in order to devise appropriate solutions in relation to the planning, development and implementation of a major computing project.	**PC5** **PC6**	Lecture Seminars Practical workshops

D Key transferable skills	Programme Learning Outcome(s) this maps against	Learning and teaching strategy
At the end of the module, students will be expected to: D1 Plan and implement actions taking responsibility for continuing professional development, including time management and organisational skills. D2 Apply critical thinking skills and an analytical and scientific approach to problem solving to complex problem including conducting research effectively, drawing on a wide variety of sources under minimal direction, and be proficient in the use of referencing sources of information.	**PD6** **PD5**	Lecture Seminars Practical workshops

8. Indicative content.
This module requires students to develop a self-directed brief (with support from a subject specialist project supervisor), which involves the research, planning and design and implementation of a computing project. Regular progress review meetings with your allocated project supervisor will take place throughout the year, with support and guidance offered with the initial project concept, rationale and deliverables. The written project proposal will address the nature of the project and any ethical considerations. Each proposal will then be considered by an internal ethics panel for final approval. If the ethics panel is not satisfied with any aspect of the proposed project, conditions will be provided, and the proposal will need to be re-submitted to the panel before the project can proceed. Project reporting will include detail of project planning, research and development, use of resources and the presentation of the honours project findings in a report which supports the final presentation and academic poster of the final project.

9. Assessment strategy, assessment methods, their relative weightings and mapping to module learning outcomes

Assessment Strategy:

Project Documentation – Students produce research project documentation that analyses a given problem and provides an analysis, proposal and design of a possible software solution, alongside an appropriate discussion of design, development and testing methodologies, as well as an overview of an agile, iterative development process, and an evaluation against the project's initial requirements, as well as any ethical issues that may arise. The project report will include three project progress logs, over the course of the project, which discuss developments in the project, key tools and techniques that they have learnt and any problems that have arisen and how these will be solved or mitigated moving forwards.

Presentation (Viva) and Academic Poster – Students formally present their final project in a 30 minute Viva to demonstrate functionality and overall effectiveness, including an overview of methodologies, tools and techniques used to develop the project. As part of this Viva, students are expected to produce and present a professional academic poster, providing a graphical overview of the development lifecycle for the project.

Students must pass each assessment element to achieve a grade in the module

Assessment Task	**Weighting**	**Week submitted**	**Grading (Pass / Fail / %)**	**Module Learning Outcome(s) the assessment task maps to**
Project Documentation	80%		%	A1, B1, B2, C1, C2, D1, D2
Presentation (Viva) and Academic Poster	20%		%	B1

10. Teaching staff associated with the module
Name and contact details
Richard Everard (everardr@btc.ac.uk)

11. Key reading list				
Author	Y	Title	Publisher	Location
Dawson, C.W.	2	The Essence of Computing Projects: A Student's Guide.	Prentice Hall	
Cottrell, S.	2	Dissertations and Project Reports: A Step by Step Guide (Palgrave Study Skills)	Macmillian	
Wysocki, R. K.	2	Effective Project Management: Traditional,	Wiley	

11. Key reading list				
Author	Y	Title	Publisher	Location
		Agile, Extreme		

12. Other indicative text (e.g. websites)

13. List of amendments since last (re)validation		
Area amended	Details	Date Central Quality informed