Course Specification

A. Course Information

Final award title(s)	Digital and Technology Solutions Professional (Data Analyst)	**Course Code(s)**	5199

Intermediate award title(s)	
Awarding Institution	London South Bank University
School	☐ ASC ☐ ACI ☐ BEA ☐ BUS ■ ENG ☐ HSC ☐ LSS
Division	
Delivery site(s) for course(s)	■ Southwark ☐ Havering ☐ Other: please specify
Mode(s) of delivery	☐Full time ■Part time[1] ☐ Both
Length of course	Part time: 4..years[1]

Approval dates:	Course(s) validated	Aug 2017
	Course specification last updated and signed off	Sept 2020
	Version number	Version 3 /Sept 2020

Professional, Statutory & Regulatory Body accreditation	Skills Funding Agency

Reference points:	Internal	LSBU Mission Statement and Strategic Plan; LSBU Core Skills Policy; LSBU Academic Regulations; School of Engineering Strategic Plan
	External	Digital and Technology Solutions Professional Standard; QAA Subject Benchmark Statement for Engineering, Engineering Council, The UK Standard for Professional Engineering; Competence 3rd Edition (UKSPEC3); Framework for Higher Education Qualifications; LSBU Academic Regulations; In accordance with the University's Academic Regulations, the awards are aligned with the Framework for Higher Education Qualifications (FHEQ), thereby setting the expected level of achievement in the course.

B. Course Aims, Features and Outcomes

Distinctive features of course	The Digital Technologies and Solutions Professional degree offers the opportunity to develop the knowledge, skills and behaviours necessary for a successful and productive career in the IT industry.

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[1] Best fit for the apprenticeship degree, 1 day per week at university, blended learning and 4 days at employers.

	The emphasis is on developing a comprehensive understanding of sophisticated digital technologies and applying knowledge and skills gained studying to real world projects in the work place – work based learning (WBL). The course is an integration of a validated existing BSc IT degree with on-the-job activity. The connectivity between the two dimensions of the course is achieved through the mapping of the IT degree modules to the Digital Professional Apprenticeship standard and work based learning projects. Finally, an end point assessment is used to evaluate competencies and assess if the apprentice has met the standard. Employers can work with the university to choose an appropriate work based projects and a final synoptic project that empowers the apprentice to new highly productive levels of competency.
Course Aims	The BSc (Hons) Digital Technologies and Solutions Professional degree aims to: 1. produce apprentices who are equipped with the core knowledge and skills to design, develop, use and manage computer systems of diverse kinds. 2. facilitate an environment where the study of the analysis, design, implementation and evaluation of computer systems can be transferred to the workplace and practical ends that benefit both the employer and apprentice learner 3. provide a combination of theory, practical skills, knowledge and behaviours suitable for the professional role – not job title - of the computing industry apprentice 4. produce apprentices with the professional and ethical standards required for employment in the industry
Course Outcomes	**A. Apprentices will acquire knowledge and understanding of:** 1. the foundations and contemporary development of theoretical computer science, computer hardware, computer networks, operating systems and application software 2. requirements analysis and the formal specification of computer systems 3. software development using a variety of software engineering techniques, design notations, development environments and programming languages 4. data encoding, storage, management and analysis 5. the fundamental issues related to robustness and security in systems, software and networks 6. social, ethical and legal issues which affect the development and use of information systems ***Teaching and learning strategy:*** There will be a combination of lectures, tutorials and computer laboratory activities to inform, discuss and enable apprentices to assimilate the material. The delivery will aim to ensure a balance of cognitive tasks involving the demonstration and application of factual knowledge with practical exercises in computer laboratories to reinforce learning through direct experience.

At level 4 independent (non-contact) study hours will be predominantly concerned with assimilation, at level 5 knowledge acquisition will take place as part of analytical study and at level 6 apprentices will be engaging in independent research.

Assessment:

For all modules summative assessment consists of either 100% coursework or a combination of coursework and two-hour closed-book examination.

Apprentices' acquisition of knowledge and understanding will be assessed by coursework tasks requiring the demonstration of such, including assessed practical tasks, report writing, in-class tests and presentations. Wherever possible formative assessment will be used to allow apprentices to gauge their own progress and address weak areas. Examinations will be closed-book and will require apprentices to demonstrate that knowledge and understanding have been achieved.

B. Apprentices will develop their intellectual skills such that they are able to:

1. locate, analyse, evaluate and make effective use of reference material including literature from academic, technical and professional sources
2. comprehend and critically evaluate theoretical arguments in computer science
3. analyse and predict future developments in computing based upon fundamental principles and evolving trends
4. evaluate, modify and synthesise approaches to software development and systems design
5. collaborate effectively and professionally with technical and non-technical colleagues
6. analyse practical problems and propose appropriate and feasible technical solutions

Teaching and learning strategy:

There will be a combination of lectures, tutorials and computer laboratory activities to analyse, explore and critically evaluate the material in order to develop apprentices' intellectual abilities around it.

The delivery will aim to ensure a balance of cognitive tasks involving problem-solving, analysis and critique with practical exercises in computer laboratories to reinforce learning through direct experience.

At level 5 independent (non-contact) study hours will be predominantly concerned with analysis of material, while by level 6 apprentices will be engaging in critical evaluation.

Assessment:

For all modules summative assessment consists of either 100% coursework or a combination of coursework and two-hour closed-book examination.

Apprentices' intellectual skills will be assessed by coursework tasks requiring the demonstration of such, including assessed practical tasks, analytical and evaluative report writing, and problem-solving in in-class tests. Wherever possible formative assessment will be used to allow apprentices to gauge their own progress, understand what is expected of them and address weak areas. Examinations will require apprentices to demonstrate problem-solving, analysis and critical evaluation.

C. Apprentices will acquire and develop practical skills such that they are able to:

1. design, develop, test and document software representative of contemporary programming practices and using professional development tools and techniques
2. analyse and specify requirements for the implementation of a range of computing and information systems
3. effectively use formal notations and graphical and numerical representations for data, processes and other relevant concepts
4. analyse systems for potential security weaknesses and propose mitigating measures that could be taken
5. comprehend the fundamental principles underpinning computer systems and use them to estimate limitations they impose and potential future advancements they might allow
6. acquire new technical competencies and skills by applying theoretical principles to future developments in technology

Teaching and learning strategy:

There will be a combination of lectures, tutorials and computer laboratory activities to contextualise course material within practical applications and utilising real-world examples wherever possible.

The delivery will aim to ensure a balance of cognitive tasks concerning the practical applications, limitations and possibilities of the material covered with practical exercises in computer laboratories to demonstrate these concepts and allow apprentices to develop practical skills.

At level 6 apprentices will undertake an independently managed project which will involve making use of practical (and other) skills acquired during the course. Apprentices taking the sandwich course will acquire practical skills and experience in their internship.

Assessment:

For all modules summative assessment consists of either 100% coursework or a combination of coursework and two-hour closed-book examination.

Apprentices' practical skills will be assessed by coursework tasks requiring the demonstration of such, including assessed practical tasks, the identification of practical techniques described in reports, and the successful application of skills in the development of their final year project. Wherever possible, but particularly during laboratory activities, formative assessment will be used to

allow apprentices to gauge their own progress and identify areas requiring more practice. Examinations will require apprentices to demonstrate familiarity with and capability of practical skills.

D. Apprentices will acquire and develop transferable skills such that they are able to:

1. communicate effectively verbally and in writing
2. work effectively in teams
3. manage time and personal resources effectively
4. sustain self-directed learning to maintain continuing professional development

Teaching and learning strategy:

Modules exist to support the development of study and communication skills, to develop effective team-working and to develop self-management skills. In addition, classroom activities in many other modules will be used to foster these abilities.

Assessment:

Modes of assessment used to gauge and develop transferable skills include essays and research reports, project records and documentation, presentations, posters, log books, websites, blogs, assessed group work and interactions on collaborative websites and social media. Formative assessment of transferable skills will be incorporated into all modules for which it is practical, and selected modules will include summative assessment as well.

Covid-19 Note:

The above delivery, as of 25th September 2020 – until further notice, will be altered to follow government guidance. All lectures will be delivered online. Tutorials will be face to face and online on alternative weeks. Attendance at the face to face sessions is optional. In this case there will be a parallel online instance of the tutorial, with the two groups unified through the tutor's live meeting.

All assessments will be managed online including phase test, exams and coursework submissions.

C. Entry Requirements	
Pre-requisites for this course	In order to be considered for entry to the course(s) applicants will be required to have the following qualifications: 112 UCAS points: • A Level BCC or; • BTEC National Diploma DMM or; • Access to HE qualifications with 9 Distinctions and 36 Merits or;

	• Equivalent level 3 qualifications worth 112 UCAS points • Applicants must hold 5 GCSEs A-C including Maths and English or equivalent (reformed GCSEs grade 4 or above). Students will be registered on a recognised apprenticeship contract with an employer. We welcome qualifications from around the world. English language qualifications for international apprenticeships: IELTS score of 6.0, TOFEL-550 (print-based), TOFEL-80 (internet-based), Cambridge Proficiency or Advanced Grade C.(See http://www.lsbu.ac.uk/__data/assets/pdf_file/0019/9280/english-language-qualifications-general.pdf for full details of LSBU's English language requirements)
Co-requisites for this course	
Qualifications required for this course	See above.

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D. Additional Information

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Course structure(s)	The course has six pathways with prescribed specialism modules. There are no optional modules other than through pathway choice. This was in line with market research which indicated employers were not keen on optionality at a level such as module delivery. Table 1 shows the program delivery by module.

Level	BSc (Hons) Digital and Technology Solutions Professional					
4	Professional Practice	Fundamentals of Software Development	Requirements Analysis and UCD	Discrete Mathematics	Software Development	Fundamentals of Computer Science
5	Big Data and Database Systems	Web Technologies	Analysis and Design	Professional Review and Future Planning	Information Systems	Systems and Cybersecurity
6	ICT Project Management in Practice	Principles of Data Mining	Artificial Intelligence	e-Portfolio	Synoptic Project	

All Modules are 20 credits each except the e-Portfolio and Synoptic project which are 30 credits each.

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          Work Based Learning related
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Table 1 Apprenticeship Programme

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The next section shows the four-year plan of modules for the Data Analyst pathway.

Data Analyst
In the years one to three there are 80 credits per year and 120 for the final year, although the e-Portfolio is technically spread across the years (i.e. population of One-file administration.

Year 1 (80 credits)

Semester 1	Semester 2
Discrete Mathematics	Professional Practice
Fundamentals of Software Development	Software Development

Year 2 (80 credits)

Semester 1	Semester 2
Fundamentals of Computer Science	Requirements Analysis and UCD
Web Technologies	Professional Review and Future Planning

Year 3 (80 credits)

Semester 1	Semester 2
Principles of Data Mining	Big Data and Database Systems
Analysis and Design	
Information System	

Year 4 (120 credits)

Semester 1	Semester 2
Systems and Cybersecurity	Artificial Intelligence
	ICT Project Management in Practice
Synoptic Project and e-Portfolio	

The modules are delivered as part of the BSc (Hons) Information Technology framework except for the Professional Review and Future Planning module and the synoptic project module. These two are specific to the apprenticeship degree.

E. Course Modules

Module Code	Module Title	Level	Semester	Credit value
CSI-4-PPR	Professional Practice	4	2	20
CSI-4-DMA	Discrete Mathematics	4	1	20
CSI-4-FCS	Fundamentals of Computer Science	4	1	20
CSI -4-RAU	Requirements Analysis and UCD	4	2	20
CSI -4-FSD	Fundamentals of Software Development	4	1	20
CSI -4-SOD	Software Development	4	2	20
CSI -5-DDD	Big data and Database Systems	5	2	20
CSI -6-ARI	Artificial Intelligence	6	1	20
CSI -5-AAD	Analysis and Design	5	1	20
CSI-5-PRF	Professional Review and Future Planning	5	2	20
CSI_5_WET	Web Technologies	5	2	20
CSI_5_ISM	Information Systems	5	1	20
CSI _6_ICT	ICT Project Management in Practice	6	2	20
BIF_6_PDM	Principles of Data Mining	6	1	20
CSI_6_SCS	Systems and Cybersecurity	6	2	20
CSI -6-SPE	Synoptic Project and e-Portfolio	6	1, 2	60

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Appendix A Digital Technologies and Solutions apprenticeship standard
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Appendix B: Curriculum Maps (BSc IT modules)

The numbered column headings under each category refer to the numbered learning outcomes in that category as they appear in the specification.

	Module Outcome		Knowledge						Intellectual						Practical						Transferable			
		cr	1	2	3	4	5	IT	1	2	3	4	5	IT	1	2	3	4	5	IT	1	2	3	4
L4	Professional Practice	20	t	ta	ta	ta	t		ta	ta	t	t	t								ta	ta	ta	t
L4	Discrete Mathematics	20	ta	ta		ta	ta		ta	t	t				ta		t		ta		ta			
L4	Fundamentals of Computer Science	20	ta	ta	ta		ta		ta	ta					ta		ta							
L4	Requirements Analysis and UCD	20	ta	ta	ta	t	ta		ta	t		t	ta		ta		ta		ta		ta	ta	ta	
L4	Fundamentals of Software Development	20	t	ta	ta	t				ta					ta	ta	ta					ta		
L4	Software Development	20	ta	ta	t	t				ta		ta			ta	ta	ta				ta	ta		
L5	Big data and Database Systems	20	tda	tda	t	t	tda		tda	tda		ta	ta		tda		ta	ta	tda		da	d		
L5	Information systems	20	tda	tda	t	t	tda		tda	tda		ta	ta		tda	tda	tda				da	d	tda	
L5	Analysis and Design	20		ta	tda	tda	tda		tda	tda		tda	tda		tda	ta	ta	ta	tda		tda	tda	tda	
L5	Web Technologies				td	tda	da		da	da			tda			tda		d			da	da	tda	
L6	Principles of Data Mining	20		tda			tda	tda			tda	d		tda	da		tda			tda	da	da	da	
L6	Artificial Intelligence	20		tda	tda	tda	tda	tda	tda		tda	d		tda	da		da			tda	da	da	da	
L6	ICT Project Management in Practice	20		tda	tda	tda	tda		tda	tda	tda	tda	tda					tda		da	da	da	tda
L6	Systems and Cyber Security	20	dta			d	tda	tda	tda			d		tda	tda	tda	tda		tda	tda	d	d		d

Key: t = taught   d = developed a = assessed

Apprenticeship modules are not mapped to the curriculum here.

Appendix C: Personal Development Planning

Personal Development Planning

A variety of terms are used in higher education to describe a process undertaken by individuals to gather evidence on, record and review their own learning and achievement, and identify ways in which they might improve themselves academically and more broadly. The term Personal Development Planning (PDP) is proposed to describe a structured process undertaken by an individual to reflect upon their own learning, performance and/or achievement and to plan for their personal educational and career development. The following table shows where PDP is being used within the framework.

Approach to PDP	Level 4	Level 5	Level 6
1 Supporting the development and recognition of skills through the personal tutor system.	One Level 4 module tutors also acts as personal tutor	Personal tutors continue to support apprentice's planning and development of records of achievement	Pathway/project supervisor take over personal tutoring role.
2 Supporting the development and recognition of skills in academic modules.	All modules plus Integrative Assignment, WBL	All modules	
3 Supporting the development and recognition of skills through purpose designed modules/units.	Business & Professional Issues	Professional Review and Future Planning	IS Project Management
4 Supporting the development and recognition of skills through research projects.	WBL	Professional Review and Future Planning, WBL	Synoptic Project and WBL
5 Supporting the development and recognition of career management skills.	Business & Professional Issues, WBL	WBL	IS Project Management, WBL
6 Supporting the development and recognition of career management skills through work experience.	WBL	WBL	WBL
7 Supporting the development of skills by recognising that they can be developed through extra curricula activities.	extra-curricular and capstone events	extra-curricular and capstone events	extra-curricular and capstone events
8 Supporting the development of the skills and attitudes as a basis for continuing professional development.	Business & Professional Issues	Professional Review and Future Planning	IS Project Management
9 Other approaches to personal development planning.	e-Portfolio	e-Portfolio, Professional Review and Future Planning	e-Portfolio
10 The means by which self-reflection, evaluation and planned development is supported e.g. electronic or paper-based learning log or diary.	e-Portfolio	e-Portfolio, Professional Review and Future Planning	e-Portfolio

Apprentices will be allocated a personal tutor for both campus-related experience and on the job liaison support.