PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	FDSc Software Developer
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Computing
Award Title (including separate Pathway Award Titles where offered):	FDSc Software Developer
Pathways (if applicable)	N/A
Other award titles available (exit qualifications):	Certificate of Higher Education
FHEQ level of final award:	5
Accreditation details:	None
Length of programme:	2 years
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA (Quality Assurance Agency) Subject Benchmark(s):	Subject Benchmark Statement: Computing 30 Mar 2022
Other external reference points (e.g., Apprenticeship Standard):	The IfATE Software Developer Occupational Standard ST0116 (2014, updated 2021) British Computer Society
Course Code(s):	FSSODEFT
UCAS Code(s):	
Approval date:	
Date of last update:	N/A

2. Programme Summary

This is a practice-based programme that aims to prepare you for a career as a Software Developer. Graduating from this programme provides you with opportunities for working in a variety of exciting occupations. Examples of such opportunities include Financial Services, Computer Gaming, Retail, Transport, Security, Health Service and Defence. You could find yourself in organisations covering large multinational, public-sector bodies, and government projects with multi-billion-pound budgets at one end of the scale to small consultancy firms at the other.

The programme integrates both academic and practice-based learning and combines significant practical skills (with some focus on professionally relevant material, e.g., Microsoft, Cisco), a work-related experience, and theoretical underpinning. The programme is designed with several core principles in mind, namely, accessibility, articulation, progression, flexibility, employer involvement, partnership.

The programme is based around themes that have general and specific relevance to various potential employment destinations, as follows:

- Theme 1: IT (Information Technology) applications and programming basics
- Theme 2: Computers and networks
- Theme 3: Website development and related applications
- Theme 4: Continuing personal and professional development

These themes, with the mixed and varied experiences involved, help you to make informed choices about future careers and make decisions about possible “top-ups” to full BSc (Hons) Degrees in several specialised areas of Computing.

The programme is then aimed at learners who have ambitions to achieve careers in Computing and IT and/or aspirations to study to a higher level, e.g., BSc (Hons) Degree.

The role of a Software Developer engages in identifying, designing, installing, and testing a software system they have built for a company from the ground up. It can range from creating internal programmes that can help businesses be more efficient to produce systems that can be sold on the open market. Once software developers have delivered the final software system, they will also help in maintaining and updating the programme to ensure that all security problems are fixed and that it operates with new databases. Software Developers create applications that allow people to do specific tasks on a computer or mobile and others develop the underlying systems that control networks.

In the role of a software developer, you could work in a variety of industries which means you could work on a variety of projects. You will work closely with developers, product managers, graphic designers, and business analysts to find out what clients want and the most efficient way to achieve them. You will be responsible to work on either the replacement of a complete system or modifying software and integrating it into existing networks. Using several programming tools and languages, your daily tasks may include:

- Talking through requirements with clients
- Testing software and fixing problems
- Maintaining systems once they are up and running
- Being a part of technical designing
- Integrate software components
- Producing efficient codes
- Writing program codes for reference and reporting

The programme will provide you with the appropriate skills and knowledge to pursue several careers within the Computing & IT, including IT Support, Software Development, Networking and Retail. The programme will place great emphasis on developing the `learner' employability skills, thus providing them with the competence and confidence to succeed in this demanding field. Importantly, the Work-Related Project is one major opportunity for learners to develop links with employers via project work [employer involvement/partnership]. You can also progress to higher awards.

3. Programme Aims embedded with Occupational Duties and Learning Outcomes enhanced with KSBs.

The Bucks Graduate Attributes focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens. The attributes are developed through the programme

Programme Aims

This programme aims to:

Create learners who can make technical decisions relating to commercial computing and diverse types of technologies.

Raise learners’ awareness of some of the challenges and opportunities presented by the Information Age and the ubiquity of computing in our daily lives. Further reinforcing this by identifying and reporting any impediments within the software development processes, to a range of internal and/or external stakeholders

Enable learners to convert customer requirements into both functional and non-functional components, with the purpose of eventually generating logical and maintainable software solutions.

Create learners who appreciate the professional, moral, and ethical issues involved in IT as well as requiring a degree of adaptability in this rapidly changing environment. Whilst considering security implications and recovery techniques with respect to decision taken during each stage of the software lifecycle, to prevent the partial loss or complete loss of the systems

Prepare learners to implement appropriate change control measures to ensure that software development changes may be tracked, and quality risks managed.

Produce learners who can take responsibility for planning, directing, recording, and achieving their own personal and professional development, alongside keeping appropriate documentation, explaining the processes and resources used.

Develop learners who can practice continuous self-learning to keep up to date with technological development to enhance relevant skills and take responsibility for own professional development.

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
K1	Demonstrate critical awareness of the role of various disciplines of computing including programming, web development, databases, and networking.
K2	Demonstrate critical appreciation of user requirements as part of the formal modelling and specification of computer-based systems and solutions.
K3	Demonstrate knowledge and critical understanding of the key activities and challenges involved in the typical software lifecycle.
K4	Demonstrate critical understanding of the business, industrial and commercial context in which computer systems are deployed and their implication for professional practice.

Analysis and Criticality (C)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
C1	Evaluate approaches to modelling to design computer-based systems, using the Object-Oriented paradigm.
C2	Critically analyse software related issues when solving these in a logical and analytical approach to problem solving in a range of contexts.
C3	Use a variety of current application technologies and architectures in the design, construction, and deployment of distributed computer systems in a range of contexts.
C4	Appraise a computer-based system in terms of their function and non-functions including reliability, useability, efficiency, and cost-effectiveness.

Application and Practice (P)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
P1	Manage significant software development projects, undertaking a range of roles including project management, quality assurance and configuration control.
P2	Provide solutions to a range of software development issue, demonstrating a range of effective approaches to planning and decision making.
P3	Apply sound programming principles to the construction and maintenance of software for deployment on a range of platforms, using appropriate programming paradigms and languages.
P4	Make effective use of a variety of information-retrieval skills as part of research and development activities in a range of contexts, including academic work and software development activities. (Including browsers, search engines and catalogues).

Transferable skills and other attributes (T)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
T1	Apply an informed and critical appreciation regarding both the effectiveness and usefulness of information-retrieval systems.
T2	Demonstrate accurate and reliable numeracy, digital, written, and oral communication in both understanding and presenting cases involving a quantitative and qualitative dimension.
T3	Operate as a member of a software development team, recognising the distinct roles and diverse ways of organising teams, while acknowledging and anticipating the professional, moral, and ethical issues involved.
T4	Manage your own learning and development using a range of approaches, including effective time management and organisational skills.
T5	Demonstrate an appreciation of the need for continuing professional development in recognition of the requirement for lifelong learning as part of effective professional practice.

Graduate Attributes

The BNU Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens.

On this programme, graduate attributes are developed through the practical application of analysis skills, mathematical principles, algorithmic intricacy, and programming techniques in a variety of creative situations, including set real-world scenarios, and life-critical Case

Studies. (C2, P3, K3, T3, P2, C1). Analysis, evaluation, and implementation are embedded throughout the programme in both individual and group tasks and through the appraisal of current and past software developer-based systems and in the way, feedback is given to your own personal work. (T1, T3, C4). An understanding and awareness of operational applications fostered with a strong focus given to applying and assessing a cross-section of life-cycle methodologies. (K3, T3). This nurtures the self-efficacy to develop your own work opportunities and to adapt to a constantly evolving technological work environment (C4, K1, K2, K4). Through analysing the historical, social, and cultural contexts of operational software developer-based systems, together with a growing social awareness is formed to ensure professional and ethical values. These are developed alongside the confidence to specify, design, implement and manage new and existing real-world, life critical systems, whilst appreciating software engineering disciplines of quality control and configuration management. (C1, P3, T4, T5, C5).

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme with the following additions / exceptions:

- Learners will normally have achieved 88-128 UCAS points; however, every application will be assessed on its individual merits.
- If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the programme.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with us accreditation of prior learning (APL) process.

5.Programme Structure

The modules will be delivered using a 30-week calendar comprised of three 10-week teaching blocks ('term') per year, covering two years in total.

Modules are set at a specific academic level and listed as being normally 20-credits. Passing modules will reward you with academic credit. The number of credits will depend on the complexity of the module and the level of effort required, which is measured in 'notional learning hours. Academic Advice webpages provide more information on the structure of taught awards offered by the University.

Level	Modules (Code, Title, and Credits)	Exit Awards
Level 4	COM4008 Programming Concepts (20) COM4009 Computer Architecture (20) COM4010 Networking (20) COM4011 Web Development (20) COM4012 Computing Computational Fundamentals (20) **Opportunity modules:** You must choose 2 x 10 credit Level 4 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4

Level 5	COM5011 Software Engineering (20) COM5020 Object Oriented Analysis Des. (20) COM5005 Real-time Systems (Team Project) (20) COM5009 Web Application Development (20) COM5013 Algorithms and Data Structures (20) **Opportunity modules:** In addition, you must choose 2 x 10 credit Level 5 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	

6. Learning, Teaching and Assessment

Please see the Academic Advice pages for a description of learning and teaching activities that are recognised by the University. Detailed information on this specific programme is outlined below:

The teaching, learning and assessment strategies employed throughout the programme (and articulated in more detail on the Module Descriptors) are those judged to be the most appropriate for each module at each stage and level of the programme. The strategies have been designed to ensure that there is progression from Level 4 where you are highly reliant upon your tutors for your learning to an advancement in skills in Level 5 where you will take more responsibility for your own learning in and out of the classroom. At Level 5, you are expected to take a more active role in own learning and future careers, thus the theoretical knowledge gained at Level 4 will be applied to simulated and real-world examples to reflect industry practice. Teaching and learning embrace a learner-centred approach, embracing the concept of learner as producer.

To effectively maintain engagement with studies, a variety of teaching and learning methods will be employed. This is thoughtfully based upon the traditional model of lecture, tutorial, seminar and practical. There will be a carefully integrated approach within a module, with an emphasis upon learning by doing. For example, a short demonstration on the use of computer hardware or software will be immediately followed by an opportunity for you to get hands-on experience and practice; an introduction to a theoretical concept will be combined with a practical exercise to explore or apply the concept within the framework of a real-world problem. A session will contain some coherent combination of elements to encourage your learning and understanding. This thinking will be extended to a more holistic level to show links and progression between those modules forging programme themes across Level 4 and Level 5.

Taught sessions will be supported by handouts, videos/DVDs, and other materials; tutors will provide references to supplementary study materials in the library and on websites. Tutors will use any appropriate technologies to support learning, for example a VLE (Virtual Learning Environment) for interfacing with you off campus. On this programme there is a strong focus to develop you as a digitally enabled learner that enhances your employability skills.

Making use of advice and feedback from tutors will play a crucial role in your learning experience. You will be encouraged to reflect upon your understanding and performance

and, with the help of tutors, plan ways of improving and developing. This may relate to your general development or to a specific task or assignment. Group work and discussion exercises will not only give you the experience of working with others but will also facilitate a collaborative and supportive learning environment where you can learn from your peers.

The fundamental tenet of advice and feedback being an important aid to learning and development has been embedded within the assessment strategy for modules. The formative benefits of assessment will be fully exploited. You will receive structured advice and feedback throughout their modules, before and after the completion of assignments.

Technology is a fundamental key theme interwoven into the programme for you to advance your digitally enabled skills to become ready for rapid change as we are on the cusp of the 4th Industrial Revolution. Discussions will be around technology in the workplace and what future technology may be available not only in the next 2-3 years but in the next 10-15 years.

Assessment Methods

The Assessment and Examination webpages provide further information on how assignments are marked and moderated, including a description of assessment activities. These also include further information about how feedback on assessed work is provided to learners, including our commitment to ensure this is provided to learners within 15 working days (the 'three-week turnaround').

Authentic assessments are informal and formal, for example presentations, simulations, portfolios, podcast, practical assignments, articles, debates, assessing skills that will be needed in the workplace like real life scenarios, interviews, demonstrations, journals, problem solving and difficult discussions, mirroring real-world etc. There is assessment that is based on real life experiences within their duties.

Informal assessments are applied throughout the delivery of teaching and basic training through stretch and challenge Q&A (Quality Assurance) (Quality Assurance), quizzes, role play and discussions/debates to ensure aims and objectives are checked, consolidated and knowledge, skills and behaviours are built upon within your development and application. Prior knowledge is revisited with reinforcement of learning to enable you to advance to your next level of learning.

Assessments will be appropriate to the task, achievable, motivating and vocationally focussed and will form a constructive part of the learning process. They will develop general transferable skills as well as academic skills. Assessments will provide sufficient opportunity for you to exhibit a level of innovation and creativity associated with excellence. The following provides a guide to the assessment principles on the Foundation Degree.

Assessments at Level 4 will be focused on ensuring you have the underlying knowledge and skills in preparation for Level 5. Many of the modules will emphasise using equipment and gaining practical skills to aid development of theory and knowledge at higher levels.

Level 5 assessments will be more demanding, with the emphasis still on development of knowledge and skills, but now encouraging learning at greater depth. You will be expected to take more independent responsibility for finding solutions to problems, and for devising the necessary approach for tackling assignments. The emphasis will shift towards summative assessment. Nevertheless, advice and feedback from tutors will continue to form an important part of your learning.

Contact Hours

You can expect to receive approximately 12 hours of scheduled learning activities per week. These may include lectures, seminars, workshops, practical sessions, or placement hours. A full breakdown of contact hours can be found in individual module descriptors.

7. Programme Regulations

This programme will be subject to the University's *Regulations for Taught Programmes*. These can be found on the University's results webpages where you can also find information on how your degree is calculated.

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals, and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet, or mobile device
- Access to the MyBNU portal where you can access all University systems, information, and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on university regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability, and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on university processes.

9. Programme monitoring and review.

BNU (Buckinghamshire New University) has several ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys.
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- Institute for Apprenticeships & Technical Education
- The QAA Subject Benchmark Statement for **Computing – Mar 2022** – see detailed mapping below
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**				**Analysis and Criticality (C)**					**Application and Practice (P)**			**Transferable skills and other attributes (T)**				
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**T1**	**T2**	**T3**	**T4**	**T5**
Subject knowledge understanding and skills/ Demonstrate an understanding of the main body of knowledge for their subject and be able to exercise insightful and critical judgement in the use of that knowledge. Be creative and innovative in the application of the principles covered in the curriculum, and be able to go beyond what has been taught in classes	X	X			X	X		X	X		X	X	X			X	X
Intellectual skills/ Analyse and apply a wide range of concepts, principles, and practices of the subject in the context of open	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X

scenarios, showing refined judgement and adaptability in the selection and use of tools and techniques																	
Computational problem-solving/ Be able to demonstrate sophisticated judgement, critical thinking, research design, and well-developed problem-solving skills with a high degree of autonomy, and to create highly effective computational artefacts across complex and unpredictable circumstances	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
Practical skills across the computing lifecycle/ Demonstrate the ability to undertake problem identification and analysis to appropriately design, develop, test, integrate or deploy a complex computing system and any associated artefacts; deeply understand the relationship between stages and be able to demonstrate related sophisticated problem-	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X

solving and evidence-informed evaluative skills																	
Interpersonal and team working Skills/ Demonstrate the ability to work in a highly proactive and accomplished manner, including as a leading member of a team, making excellent use of tools and techniques to proficiently communicate, manage tasks, and plan projects with minimum guidance	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Professional practice covering Equality, diversity and inclusion, Sustainability and Entrepreneurship and enterprise education/ Identify best-of-kind practices and effect highly principled solutions within a professional, legal, and ethical framework to consistently address a wide breadth of relevant considerations – including data management and use, security, equality, diversity, and inclusion (EDI (Equality, Diversity, and Inclusion) (Equality,	X				X	X	X			X		X		X	X	X	X

Diversity, and Inclusion) (Equality, Diversity, and Inclusion) (Equality, Diversity, and Inclusion) (Equality, Diversity, and Inclusion)) and sustainability – in the work that they undertake																	

Mapping of Programme Learning Outcomes to Core Modules

Programme Learning Outcomes	Knowledge and understanding (K)				Analysis and Criticality (C)					Application and Practice (P)			Transferable skills and other attributes (T)				
Modules	**K 1**	**K 2**	**K 3**	**K 4**	**C 1**	**C 2**	**C 3**	**C 4**	**C 5**	**P 1**	**P 2**	**P 3**	**T 1**	**T 2**	**T 3**	**T 4**	**T 5**
LEVEL 4																	
COM4008 Prog. Concepts	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
COM4009 Comp. Arch.	X	X				X	X		X		X			X		X	
COM4010 Networking	X	X		X	X			X	X	X	X		X		X		
COM4011 Web Dev		X	X			X	X	X		X		X			X	X	
COM4012 Computing Comp. Fund.			X	X	X	X		X		X		X	X	X	X		
Opportunity Modules																	
LEVEL 5																	

COM5011 Software Engineering	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
COM5020 Object Oriented Analysis & Design		X			X	X	X		X	X	X	X	X	X	X		
COM5005 Real-time Systems (Team Project)	X	X	X	X	X	X	X	X	X		X	X		X	X		X
COM5009 Web Application Development	X	X			X	X	X		X	X		X	X		X		
COM5013 Algorithms and Data Structures			X		X	X		X		X	X	X		X			
Opportunity Modules																	

Knowledge, skills, and behaviours mapping document link - FDSc Software Developer KSB (Knowledge, Skills, and Behaviours) (Knowledge, Skills, and Behaviours) Mapping .docx