Programme Specification

A Programme Specification provides a concise summary of the main features of a programme and its intended learning outcomes. It is intended to be used by prospective students, current students, academic staff and potential employers.

Programme Title:	
BSc (Hons) Computing **BSc (Hons) Computing with Foundation Year** **BSc (Hons) Computing (top up)**	
Programme (AOS) Code(s):	**BT1CTG1** **BT1CTG4** **BT6CTG1**
UCAS Code:	G400
Name of Final Award:	**Bachelor of Science with Honours, BSc (Hons)**
Level of Qualification:	**Level 6**
Regime of Delivery:	**Attendance**
Mode(s) of Delivery:	**Full Time**
Typical Length of Study (Years):	**3 years / full-time** **4 years/ full-time with Foundation Year** **1 year / full time (top up)**
Professional Body Recognition / Accreditation (including specific requirements where applicable):	**N/A**

Brief Description of the Programme

What the award is about and who the programme is aimed at:
The aim of this honours programme is to ensure that graduates acquire up to date knowledge and practical competence in computer systems and software development, underpinned with the relevant theories of computer science. The course provides an employability rich balance of theory and hands-on practice in modern and developing computer based systems and software engineering. This course is based on the main foundations of current computing and covers areas including: systems/software analysis & design, programming (full-stack), secure networking, cloud based development, mobile systems and Artificial Intelligence. This offers students the strong opportunity to fulfil the UK Governments identified 'digital skills crises', in providing a secure base for future development within the workplace. Furthermore, the programmes technical elements have been underpinned by a number of professional certification programmes including AWS, Microsoft, HP and Cisco, that can optionally be taken by students through levels 4, 5 & 6. This opportunity enhances student prospects when entering future employment.

Why students should choose this award:
Although this course is broadly based it nevertheless will teach you key vocational skills in-depth throughout your time with us, covering the various Computer Development stages of: Analysis & Design (applying UML Modelling), Programming (implementing code in C#, Java and other relevant formal languages) and Testing (covering Unit, Integration, System, Acceptance), Networking & Security (traditional networking and security, cloud networks), Mobile based systems and software development (native, web and hybrid app development), Artificial Intelligence (rule-based techniques and machine learning techniques), Databases (examining current storage and retrieval of data techniques in the field of computing and data science). Embedded in the course will be key themes of critical thinking and computational thinking, by which we mean the ability to develop and understand algorithmic solutions to problems. Furthermore, the highly skilled and qualified lecturers have underpinned much of the material with 'first-hand' commercial experience (via Knowledge Based Transfer and/or previous IT careers) as well as being enhanced by their own research activities.

Course Key Features:

- Industry career employability skills focus with direct links and engagement with sector employers
- Stimulating, engaging and inspired student centred teaching underpinned by the latest teaching and learning approaches to fully engage students in individual and collaborative learning
- Experience of developing strong problem solving skills through software and system implementation
- Comprehensive industrial current software and equipment
- Development of important degree level transferable skills in preparation for the dynamically changing and challenging world of employment in the 21st century
- A course building strong computing fundamentals on which to maximise understanding of exciting current sector developments
- Opportunities to focus on chosen subject specialism career area via a range of option choices.

Programme Aims

1	Provide students with a deep understanding of the methodologies, technologies and techniques used within computer systems and software development.

2	Enable students to apply knowledge of computer science and engineering principles to the development of systems and software for industrial, business, and commercial applications.
3	Make our students aware of the impact, challenges presented, and the increasing pervasiveness and ubiquity of Computing in our contemporary world. Enabling the building of solutions using different technologies, architectures and appropriate methodological approaches in the context of varying organisational structures.
4	Enable students to be flexible enough in the evaluation of different approaches to solving problems and taking technical decisions using computer systems, within a constantly changing complex and dynamic professional environment.
5	Develop an appreciation of professional, moral and ethical issues involved in computing systems and software development, within a legal framework, and a sensitivity to changes in computing and information technology to be a positive benefit to society.
6	Equip students with the knowledge and skills, necessary to become a productive member of a computing or software development team.
7	Give students a range of technical competencies and transferable skills, including the attributes of a self-motivated lifelong learner, which can be applied to higher level awards, weather taught or research based at level seven and level eight.

Programme Learning Outcomes

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.

ID	Learning Outcome
On successful completion of the programme a graduate will be able to:	
A. Knowledge and Understanding	
A1	Appreciate the core disciplines of Computing including: software development, Web, databases and networking.
A2	Identify the practical requirements for both computer and Web-based systems including the recognition and analysis of criteria and models leading to specifications used in the solution of specific problems.
A3	Explain the mathematical principles that underpin computer-based systems
A4	Acknowledge the key activities prevalent in the software lifecycle, alongside their outputs and dependencies between stages, alongside the ethical, professional and legal standards required.
A5	Recognise the business, industrial, commercial and social context in which computer systems are deployed, with particular regard to their usability.
B. Intellectual/Cognitive Skills	
B1	Evaluate and deploy approaches to modelling in order to design computer-based Information Systems, with regard to the current development paradigm.

B2	Solve problems in a logical and analytical manner.
B3	Plan, manage, undertake and report on a significant project.
B4	Make informed decisions and produce innovative plans, approaches and solutions to software and computer system issues within a Quality Assurance and Testing Framework.
B5	Appreciate the role of critical evaluation and testing in ensuring that computer-based Information Systems meet the criteria for their defined use and future developments.
B6	Analyse, design, build and deploy distributed computer systems using a variety of current application technologies and architectures.
B7	Critically evaluate technical, business and human features of software systems.
B8	Appraise new and emerging computer related technologies with particular regard to Cloud Computing and Security Systems.
B9	Appreciate the unique challenges associated with the development of mobile and web-based applications.
C. Practical Skills	
C1	Analyse, design, develop and maintain reliable software, with particular regard to Information Systems encapsulated in a Quality Assurance Framework.
C2	Employ analytical techniques and design tools in the development of software artefacts.
C3	Apply sound programming principles to the construction and maintenance of software deployed on multiple platforms, using appropriate programming paradigms and languages.
C4	Evaluate systems in terms of quality and associated trade-offs.
C5	Recognise the risks or safety aspects associated with various computer-based systems
C6	Specify, design, implement and test computer-based Information Systems.
D. Key/Transferable Skills	
D1	Employ information-retrieval skills.
D2	Demonstrate numeracy and literacy in both understanding and presenting cases involving a quantitative and qualitative dimension.
D3	Work as a member of a development team, recognising the different roles within a team and different ways of organising teams.
D4	Manage one's own learning and development including time management and organisational skills.
D5	Appreciate the need for continuing professional development in recognition of the need for lifelong learning.

Programme Structure

Programmes are structured in stages. The number of stages will vary depending on the mode (e.g. full-time, part-time), duration and location of study which will be detailed in the Programme Handbook.

Modules are set at a specific academic level and listed as either core (compulsory) or optional. The level indicates the relative academic difficulty which will increase through the programme. Passing modules will reward you with academic credit. The amount of credits will depend on the complexity of the module and the level of effort required, which is measured in 'notional learning hours'.

Our Academic Advice webpages provide more information on the structure of taught awards offered by the University.

Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to sector developments.

Foundation Level (Optional for students on degree programmes)

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
FY026	Preparing for Success Knowledge and Creativity	N/A	C	Yes
FY027	Preparing for Success Self-development and Responsibility	N/A	C	Yes
FY028	Inquiry and Research Skills	N/A	C	Yes
FY006	Digital Media	N/A	C	Yes
FY007	Computing Essentials	N/A	C	Yes

Level Four

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
CO450	Computer Architectures	15	C	Yes
CO452	Programming Concepts	15	C	Yes
CO454	Digital Technologies & Professional Practice	15	C	Yes
CO456	Web Development	15	C	Yes
CO451	Networking	15	C	Yes
CO453	Application Programming	15	C	Yes
CO455	User Experience (UX)	15	C	Yes
CO457	Business Modelling	15	C	Yes

Level Five

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
CO550	Web Applications	15	C	Yes
CO567	Object Oriented System Development	15	C	Yes
CO558	Database Design	15	C	Yes
CO556	Network Systems	15	C	Yes
CO559	Intro to Intelligent Systems (Team Project)	15	C	Yes
CO566	Mobile Systems	15	C	Yes
CO557	Software Engineering	15	C	Yes
CO551	Open Source Systems	15	C	Yes

Level Six

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
CO666	Advanced Mobile Development	15	C	Yes
CO659	Enterprise Systems Development	15	O	Yes
CO652	Knowledge-Based Systems in Artificial Intelligence	15	O	Yes
CO656	Database Development	15	O	Yes
CO657	Database Technologies	15	O	Yes
CO651	Quality Assurance & Testing	15	C	Yes
CO653	Learning Machines & Intelligent Agents	15	O	Yes
CO654	Cloud Computing	15	O	Yes
CO655	Security	15	O	Yes
CO650	Advanced Programming	15	O	Yes
CO658	Data Structures and Algorithms	15	O	Yes
CO699	Project	30	C	Yes

Learning and Teaching Activities

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:

Modules on this programme will be taught in line with best practice across the university and in the sector. A variety of approaches, and good use of the latest technology, will be blended together to engage students in learning in class and beyond, and to encourage full student participation. Meanwhile, the Course Team will strive to ensure that all modules embrace current industrial practice wherever possible.

The teaching and learning strategies employed throughout the course are those judged to be the most appropriate for each module at each stage and level of the course. The strategies have been designed to ensure that there is progression from formal teaching through to student centred independent learning as the student progresses through the levels of the course(s).

A range of teaching methods will be used including:

Lectures
This is the most formal teaching strategy employed in teaching the modules. It is generally used to deliver a body of theoretical information to a large group of students and is most effective when followed up by a seminar or tutorial session to consolidate learning.

The lecture format may be supported by written handouts, web or library references which serve to reinforce and expand the audio-visual information presented. In addition, staff will make appropriate use of the VLE (Blackboard) facilities. This should enable lecturers to enhance the traditional communication and learning mediums, as well as making material available to students at home and university.

Tutorials / Practical Sessions
Often in smaller groups, tutorials are guided learning sessions, which can either support a formal lecture by students working through tutorial sheets with the help of a lecturer or by students working through practical exercises in say a computing room.

Seminars
These can vary from large group seminars, which provide an opportunity for the student-led formal debate of particular topic areas, to 'impromptu' discussion sessions with smaller groups, which may for example follow the showing of a video.

Other techniques such as industrial visits, guest lectures and computer aided learning tools will be used where appropriate. This variety of techniques is aimed at stimulating student learning. The teaching and learning strategies for individual modules are detailed in the relevant module pro-forma.

Additional Course Costs

There are costs associated with all studies, additional to the tuition fee, which require consideration, when planning and budgeting for expenditure. Costs are indicative and for the total length of the course shown unless otherwise stated and will increase with inflation; depending on the programme they may include equipment, printing, project materials, study trips, placement activities, DBS and/or other security checks.

Contact Hours

1 unit of credit is the equivalent of 10 notional learning hours. Full time undergraduate students study 120 credits (1200 hours) and full-time postgraduate students study 180 credits (1800 hours) per year or 'stage' of the course.

Course Stage	Scheduled Activities (Hours)	Guided Independent Study (Hours)	Placement / Study Abroad / Work Based Learning (Hours)
Foundation Year	360	840	N/A
Year One	360	840	N/A
Year Two	360	840	N/A
Year Three	360	840	N/A

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 students, including our commitment to ensure this is provided to students within 15 working days (the 'three-week turnaround').

Assessment Strategies
A variety of assessment vehicles will be used as appropriate to the module, including assignments carried out in the student's own time, in-class assignment, workshops, presentations and formal examination. The form of assessment has been chosen so as to motivate students to achieve their best, and create learning activities for the students. The assessment vehicles for individual modules are detailed in the module descriptor.

Assessments will be appropriate to the task, achievable, motivating and vocationally focussed and will form a constructive part of the learning process.

Assessments will develop general transferable skills as well as academic skills.

Assessments will provide sufficient opportunity for the best students to exhibit a level of innovation and creativity associated with excellence.

During the Foundation Year, students will be exposed to a variety of summative and formative assessments whilst developing the academic skills to be a successful student at university; course content and Learning Outcomes strongly relate to students developing their knowledge and understanding of the subjects being studied and assessed.

Level 4 assessments will be primarily formative and will encourage the development of appropriate academic practice and concepts. The emphasis will be on frequent small-scale assessments wherever possible with a balance between formative and summative assessment.

Level 5 assessments will be more demanding, with the emphasis still on development of knowledge, skills, and concepts but now encouraging learning at greater depth, emphasising the fundamental principles. There will be a shift towards summative assessment.

Level 6 assessments are designed so as to allow students to demonstrate their knowledge and skills so that they have become effective, independent learners. The emphasis is on summative assessment.

Advice, Feedback and Collaborative Learning
Assessment is an integral part of the education process, promoting student learning by providing a focus for consolidating, applying and demonstrating understanding of the subject matter. The listed summative assessment regime essentially measures and grades learner development and achievement in relation to the intended Learning Outcomes. It also generates feedback information for students about the strengths and weaknesses in their work, with tutors affirming what students have done well whilst giving constructive and encouraging advice about areas requiring reflection and further improvement.

In fact, tutor feedback on formal assessment elements is just part of the ongoing dialogue with students about their learning and personal development. Tutors will offer students frequent opportunities to discuss their progress, where their work can be examined and reviewed, including the evaluation of plans and drafts for assignments prior to submission. This supportive engagement helps to clarify what "good performance" is, with reference to published criteria and expected standards; it also encourages, motivates and directs students towards achieving their full potential.

Different strategies for timely advice and effective feedback will be adopted, according to what is fit-for-purpose for students and modules. For instance: good or bad examples of previous student work not only give students clues about appropriate content, structure and presentation of assignments but also highlight common mistakes and omissions; mock exam papers and formative tests; work portfolios represent a collection of structured activities completed over a period of time with regular interactions with the tutor; individual and group tutorials; practising presentations with other students can invite peer review; model answers can supplement and extend the feedback given on assessments; group discussions can promote reflection and collaborative learning; audio and video recordings can be used at various points to explain topics and to give guidance; other technology (such as the VLE) can facilitate information sharing, and support learning and collaboration.

Classification

Calculation of final award:	**The Degree Classification will be calculated as follows:** **Level 5 – 33%** **Level 6 – 67%**

For full details of assessment regulations for all taught programmes please refer to our Results webpages. These include the criteria for degree classification.

Admissions Requirements

Please see the Application webpages for more information on how to apply, including a statement on how we support students from a variety of backgrounds. Please also see our general entry requirements for taught programmes. Applicants who do not meet our published entry requirements are encouraged to contact our admissions team for further advice and guidance.

Typical applicant profile and any programme-specific entry requirements

Applicants will be primarily assessed on their academic qualifications although some previous experience and interest in software engineering or computing or IT is desirable as part of the candidate's overall profile. A typical offer will include GCSE Maths and English at grade C or above and a UCAS Tariff score of 80. A minimum of two full A-levels (or equivalent) is required. This score can be achieved from passes in two 6-unit GCE A-levels/AVCEs or from a pass in a 12-unit AVCE. Every application is considered on an individual basis.

English Language Requirements:

- IELTS: 6 (min 5.5 in all areas)
- TOEFL Internet test: 87 (R22, L21, S23, W21)
- Pearson: 55 (51 in all sub scores).

We also consider applications from those who have gained relevant skills through a wide range of vocational qualifications or responsible experience and experiential learning for mature applicants.

For BSc (Hons) Computing (4 years)

Applicants who do not meet the minimum requirements for the 3-year programme, or those who do not feel fully prepared for a Level 4 course, will be considered for the 4-year programme including a Foundation Year.
Please see the University's General Entry Requirement webpages for requirements for entry at this level.

BSc (Hons) Computing (top-up)
The EdHat International Higher Diploma (IHD) in Software Development has been mapped to BSc(Hons) Computing, at Level 4 and Level 5 stages. Applicants who have achieved this award will be eligible to apply to BSc (Hons) Computing (top-up) to complete Level 6.

Do applicants required a Disclosure and Barring Service (DBS) Check?	**No**

Opportunities for students on successful completion of the programme

Why students should choose this award:
Although this course is intentionally broadly based, it nevertheless will teach you key vocational skills in-depth throughout your time with us, covering the various Software Lifecycle stages (with example content of each as follows): analysis (applying Use Cases, Sequence Diagrams), Design (covering Class Diagrams, Finite State Machines), programming (implementing code in C#, Java & C++) and testing (addressing Unit, Integration, System, Acceptance). In addition, the teaching staff have underpinned much of the material with 'first-hand' commercial experience (via Knowledge Based Transfer and/or previous IT careers) as well as being enhanced by their own research activities and professional certification programmes provided by Microsoft, HP and Cisco. This latter element can optionally be taken by students throughout the course, providing a considerable advantage when finally entering the jobs market.

Opportunities available for students after completion of the award:
This programme is highly vocational in its approach, mapping against the practical needs expected from modern Computing Professionals, whatever sectors their 'hands-on' skills will be required and in high demand. These areas could cover commercial, government, health, education, Defence, environment, voluntary etc., where our Graduates will be well placed to pursue a career within the increasingly prolific roles of Programmers, Analysts, QA Testers, Back-End and Front-End developers, UX Designers, System Administrators and Full-Stack Web Developers

Recognition of Prior Learning

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules. Please refer to our Credit Accumulation webpages for further guidance.

Recognition of recent studies to provide the opportunity for students to top-up via various routes who have satisfied UK recognised qualifications such as HND/HNC in appropriate and related subjects.

Student Support

During the course of their studies, students will be supported in the following ways:

- At the start of their studies all students will receive a full **induction** to the programme which will include introduction to the staff responsible for delivering the course, and access to library and IT facilities
- The **Programme Handbook** will outline the exact nature of the course and how it is structured, including the availability of option modules
- Each student will be allocated a **Personal Tutor** who will support their academic development, be able to advise and guide them with their studies and, where necessary, give advice on study options
- Students will be able to access our full range of **support services**, including the Learning Development Unit for skills and study support, the Library, the Careers and Employability Team, Student Finance Team, Accommodation and Counselling Services

Programme specific support (if applicable)

Appendices

Quality Assurance

Awarding Body:	**Buckinghamshire New university**
Language of Study:	**English**
QAA Subject Benchmark Statement(s):	**Computing (2016)**
Assessment Regulations:	***Academic Assessment Regulations*, accessible via the Academic Advice webpages (https://bucks.ac.uk/students/academicadvice)**
Does the Fitness to Practise procedure apply to this programme?	**No**
Ethics Sub-committee	
Date Published / Updated:	**January 2019**
Date programme re-approval required:	**2025**

Other awards available on programme (Exit Qualifications)

Please refer to the *Academic Qualifications Framework* for Exit Qualifications recognised by the University and credit and module requirements.

Name of Exit Qualification:	**Ordinary Degree**
Full name of Qualification and Award Title:	**BSc Computing**
Credits requirements:	**300 Credits**
Module requirements:	**ALL 120 Credits at Level 4** **ALL 120 Credits at Level 5 PLUS 60 credits from the following Level 8 modules:** • **CO666 Advanced Mobile Development** • **CO654 Cloud Computing** • **CO651 Quality Assurance & Testing** • **CO652 Knowledge-Based Systems in Artificial Intelligence** • **CO653 Learning Machines & Intelligent Agents** • **CO656 Database Development** • **CO657 Database Technologies** • **CO659 Enterprise Systems Development** • **CO655 Security**

Learning Outcome
Make informed design decisions and produce innovative plans whilst developing computer systems for diverse platforms using industrial standard tools.
Critically evaluate different techniques and tools used within the development of computer based systems.

Apply sound computing and software principles to the construction, maintenance and testing of complex computer / software deployed on multiple platforms & processors, using current appropriate standards, protocols and tools (e.g. programming paradigms, languages, hardware)
Select and systematically utilise engineering principles and analysis and design techniques to the specification, design, development, testing and evaluation of complex high quality computing information systems and software systems.
Work as a member of a development team, recognising the different roles within a team and different ways of organising teams.
Manage one's own learning and development including time management and organisational skills and appreciate the need for continuing professional development in recognition of the need for lifelong learning.
Develop and demonstrate knowledge of professional, legal and ethical responsibilities of computing personnel.

Name of Exit Qualification:	**Diploma of Higher Education (DipHE)**
Full name of Qualification and Award Title:	**DipHE Computing**
Credits requirements:	**240 Credits**
Module requirements:	**ALL 120 Credits at Level 4** **ALL 120 Credits at Level 5**
Learning Outcome	
Make informed design decisions and produce innovative plans whilst developing computer systems for diverse platforms using industrial standard tools including areas of networking, mobile platforms, databases and Web technologies.	
Evaluate different techniques and tools used within the development and management of computer systems.	
Apply sound computing and software principles to the construction and maintenance of computer / software deployed on multiple platforms & processors, using current appropriate standards, protocols and tools (e.g. programming paradigms, languages, hardware)	
Apply engineering principles and analysis and design techniques to the specification, design, development and evaluation of high quality computing information systems and software systems.	
Work as a member of a development team, recognising the different roles within a team and different ways of organising teams.	
Manage one's own learning and development including time management and organisational skills.	

Name of Exit Qualification:	**Certificate of Higher Education (CertHE)**
Full name of Qualification and Award Title:	**CertHE Computing**
Credits requirements:	**120 Credits**
Module requirements:	**ALL 120 Credits at Level 4**
Learning Outcome	
Learning Outcome	

Comprehend and apply a simple requirement in a structured manner and implement a computer based / software solution; with appropriate application of programming techniques and coding skills.
Demonstrate competence in the design and development of a cross-platform Web ‘front-end’ solution, paying appropriate attention to user expectations and process needs.
Understand the operation of the major hardware units of computers and appreciate the fundamental components and protocols of network systems.
Adopt a systematic approach to the design and evaluation of human computer interaction, as part of different development projects.
Demonstrate an understanding of digital technologies within a professional context, and how different tools and environments can be used for handling information, communication and other purposes.