



SECTION 1: KEY PROGRAMME DETAILS

PART A: PROGRAMME INFORMATION	
Highest Award	BSc (Hons) Computer Science
Interim Award	BSc Computer Science
Interim Award	DipHE Computer Science
Interim Award	CertHE Computer Science
Awarding Institution	UWE Bristol
Teaching Institution	UWE Bristol
Delivery Location	Frenchay Campus
Study Abroad / Exchange / Credit Recognition	Placement X Sandwich Year X Credit Recognition X Year Abroad X
Faculty Responsible For Programme	Faculty of Environment & Technology
Department Responsible For Programme	FET Dept of Computer Sci & Creative Tech
Professional Statutory or Regulatory Body (PSRB) Links	British Computer Society (BCS)
Apprenticeships	
Mode of Delivery	Full-time
ENTRY REQUIREMENTS	UCAS Tariff Points: Tariff points as appropriate for the year of entry - up to date requirements are available through the UWE Bristol website.
For Implementation From	1 Sep 2020
ISIS Code/s	Programme Code I10G13-SEP-FT-FR-G500 Other codes: JACS Computer science HECoS 100366: Computer Science UCAS SLC

SECTION 2: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES

PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES	
1. (Programme) Overview (c. 400 words)	
<p>This programme provides a flexible, employer-facing education in Computer Science. Through modern teaching methods the programme supports students to use complex algorithms, implement software on state of the art platforms and explore big data. Suitably designed and selected modules offer students the opportunity to specialise their knowledge.</p> <p>All our graduates will leave with familiarity of the basic tools and concepts of modern AI. Some of our graduates will have taken the opportunity to leave with advanced skills in AI and Data Analytics ready to meet the worldwide skills shortage in this area, while others might explore the evolving world of Smart Devices; making this programme valuable for the home and the overseas educational market.</p>	
2. Educational Aims (c. 4-6 aims)	
<p>This programme aims to:</p> <p>Develop able and enabled graduates who contribute to their profession and society.</p> <p>Develop competent software developers who can explore and make use of new technologies as they emerge.</p> <p>Develop graduates who have the skills and habits of thinking that allow for life-long learning.</p> <p>Develop graduates who are equipped to make a contribution to the discipline either through research or practice.</p> <p>Develop graduates who recognise their ethical and professional responsibilities.</p>	
3. Programme and Stage Learning Outcomes (c. 6-8 outcomes)	
Programme (Learning) Outcomes (POs)	
Programme Learning Outcomes	
PO1	Apply Artificial Intelligence concepts and techniques to offer innovative solutions to problems or to enhance the efficiency and effectiveness of existing systems.
PO2	Be able to use their technical knowledge and skills to contribute to and deliver innovation through independent, self-driven evidence-based enquiry.
PO3	Be able to recognise security threats and their implications, plan actions and design systems to manage them
PO4	Be competent software developers, with excellent problem solving skills and the ability to adapt to different development environments
PO5	Be able to make a significant contribution as a member of a team in the development of computer based systems, offering solutions in a range of application areas.

PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES

PO6	Respond to and act upon the ethical, legal and professional implications which they may encounter during their professional lives.
PO7	Be equipped to understand and respond to the changing needs of industry and society

PART B: Programme Structure**1. Structure****Artificial Intelligence****Year 1****Year 1 Compulsory Modules**

Code	Module Title	Credit	Type
UFCFGS-15-1	Artificial Intelligence I 2020-21	15	Compulsory
UFCFDS-15-1	Computer Systems Architecture 2020-21	15	Compulsory
UFCFFS-30-1	Foundations of Computing 2020-21	30	Compulsory
UFCFHS-30-1	Principles of Programming 2020-21	30	Compulsory
UFCFES-30-1	Web Development and Databases 2020-21	30	Compulsory

Year 2**Year 2 Compulsory Modules Group 1 - all pathways**

Code	Module Title	Credit	Type
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UFCFYR-15-2	Advanced Algorithms 2021-22	15	Compulsory
UFCFWK-15-2	Operating Systems 2021-22	15	Compulsory
UFCF7S-30-2	Systems Development Group Project 2021-22	30	Compulsory
Year 2 Compulsory Modules Group 3 - Artificial Intelligence Route			
Code	Module Title	Credit	Type
UFCF8S-30-2	Advanced Software Development 2021-22	30	Compulsory
UFCF9S-15-2	Artificial Intelligence II 2021-22	15	Compulsory
UFCFAS-15-2	Machine Learning 2021-22	15	Compulsory
Year 3			
Year 3 Compulsory module - AI route			
Code	Module Title	Credit	Type
UFCFUR-15-3	Advanced Artificial Intelligence 2022-23	15	Compulsory
Year 3 Compulsory Modules Group 1 - All routes			
Code	Module Title	Credit	Type
UFCFXK-30-3	Digital Systems Project 2022-23	30	Compulsory
UFCFTR-30-3	Distributed and Enterprise Software Development 2022-23	30	Compulsory
Year 3 Option group 1 - all routes			
The student must take 15 credits from the modules in Option group 1 - all routes.			
Code	Module Title	Credit	Type
UFCFVJ-15-3	Professional Development 2022-23	15	Optional
UFCFJS-15-3	Professional Studies in Computing 2022-23	15	Optional
Year 3 Option group 3 - all routes			

The student must take 15 credits from the modules in Option group 3 - all routes.

Code	Module Title	Credit	Type
UFCF7H-15-3	Mobile Applications 2022-23	15	Compulsory
UFCFXR-15-3	Autonomous Agents and Multi-Agent Systems 2022-23	15	Optional

Year 3 Options group 2 - all routes

The student must take 15 credits from the modules in Options group 2 - all routes.

Code	Module Title	Credit	Type
UFCFWR-15-3	Advanced Systems Programming 2022-23	15	Optional
UFCFEL-15-3	Security Data Analytics and Visualisation 2022-23	15	Optional

Smart Devices

Year 1

Year 1 Compulsory Modules

Code	Module Title	Credit	Type
UFCFGS-15-1	Artificial Intelligence I 2020-21	15	Compulsory
UFCFDS-15-1	Computer Systems Architecture 2020-21	15	Compulsory
UFCFFS-30-1	Foundations of Computing 2020-21	30	Compulsory
UFCFHS-30-1	Principles of Programming 2020-21	30	Compulsory
UFCFES-30-1	Web Development and Databases 2020-21	30	Compulsory

Year 2

Year 2 Compulsory Modules Group 1 - all pathways

Code	Module Title	Credit	Type
UFCFYR-15-2	Advanced Algorithms 2021-22	15	Compulsory

UFCFWK-15-2	Operating Systems 2021-22	15	Compulsory
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UFCF7S-30-2	Systems Development Group Project 2021-22	30	Compulsory
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Year 2 Compulsory Modules Group 4 - Smart Devices Route

Code	Module Title	Credit	Type
UFCFCS-30-2	Digital Design 2021-22	30	Compulsory
UFCFBS-15-2	Embedded Systems Programming 2021-22	15	Compulsory
UFCFVK-15-2	Internet of Things 2021-22	15	Compulsory

Year 3

Year 3 Compulsory module - Smart Devices route

Code	Module Title	Credit	Type
UFCFVR-15-3	Communications and Protocols 2022-23	15	Compulsory

Year 3 Compulsory Modules Group 1 - All routes

Code	Module Title	Credit	Type
UFCFXK-30-3	Digital Systems Project 2022-23	30	Compulsory
UFCFTR-30-3	Distributed and Enterprise Software Development 2022-23	30	Compulsory

Year 3 Option group 1 - all routes

The student must take 15 credits from the modules in Option group 1 - all routes.

Code	Module Title	Credit	Type
UFCFVJ-15-3	Professional Development 2022-23	15	Optional
UFCFJS-15-3	Professional Studies in Computing 2022-23	15	Optional

Year 3 Option group 3 - all routes

The student must take 15 credits from the modules in Option group 3 - all routes.

Code	Module Title	Credit	Type
UFCF7H-15-3	Mobile Applications 2022-23	15	Compulsory
UFCFXR-15-3	Autonomous Agents and Multi-Agent Systems 2022-23	15	Optional
Year 3 Options group 2 - all routes			
The student must take 15 credits from the modules in Options group 2 - all routes.			
Code	Module Title	Credit	Type
UFCFWR-15-3	Advanced Systems Programming 2022-23	15	Optional
UFCFEL-15-3	Security Data Analytics and Visualisation 2022-23	15	Optional
General route			
Year 1			
Year 1 Compulsory Modules			
Code	Module Title	Credit	Type
UFCFGS-15-1	Artificial Intelligence I 2020-21	15	Compulsory
UFCFDS-15-1	Computer Systems Architecture 2020-21	15	Compulsory
UFCFFS-30-1	Foundations of Computing 2020-21	30	Compulsory
UFCFHS-30-1	Principles of Programming 2020-21	30	Compulsory
UFCFES-30-1	Web Development and Databases 2020-21	30	Compulsory
Year 2			
Year 2 Compulsory Modules Group 1 - all pathways			
Code	Module Title	Credit	Type
UFCFYR-15-2	Advanced Algorithms 2021-22	15	Compulsory

UFCFWK-15-2	Operating Systems 2021-22	15	Compulsory
UFCF7S-30-2	Systems Development Group Project 2021-22	30	Compulsory
Year 2 Compulsory Modules Group 2 - General Route			
Code	Module Title	Credit	Type
UFCF8S-30-2	Advanced Software Development 2021-22	30	Compulsory
UFCF9S-15-2	Artificial Intelligence II 2021-22	15	Compulsory
UFCFVK-15-2	Internet of Things 2021-22	15	Compulsory
Year 3			
Year 3 Compulsory Group - General route			
Code	Module Title	Credit	Type
UFCFU3-15-3	Advanced Databases 2022-23	15	Compulsory
Year 3 Compulsory Modules Group 1 - All routes			
Code	Module Title	Credit	Type
UFCFXK-30-3	Digital Systems Project 2022-23	30	Compulsory
UFCFTR-30-3	Distributed and Enterprise Software Development 2022-23	30	Compulsory
Year 3 Option group 1 - all routes			
The student must take 15 credits from the modules in Option group 1 - all routes.			
Code	Module Title	Credit	Type
UFCFVJ-15-3	Professional Development 2022-23	15	Optional
UFCFJS-15-3	Professional Studies in Computing 2022-23	15	Optional
Year 3 Option group 3 - all routes			
The student must take 15 credits from the modules in Option group 3 - all routes.			
Code	Module Title	Credit	Type

UFCF7H-15-3	Mobile Applications 2022-23	15	Compulsory
UFCFXR-15-3	Autonomous Agents and Multi-Agent Systems 2022-23	15	Optional
Year 3 Options group 2 - all routes			
The student must take 15 credits from the modules in Options group 2 - all routes.			
Code	Module Title	Credit	Type
UFCFWR-15-3	Advanced Systems Programming 2022-23	15	Optional
UFCFEL-15-3	Security Data Analytics and Visualisation 2022-23	15	Optional

PART C: Higher Education Achievement Record (HEAR) Synopsis

A graduates of this programme will be equipped with excellent technical and thinking skills thus enabling them to be an innovative problem solver. They will be familiar with a and practised in a range of programming languages and deployment environments. They will be familiar with tools, techniques and methods in Artificial Intelligence. They will have experienced a rich teaching environment and will be practised in professional skills. They will have connected with industry and will be equipped to respond to the future. They will understand their ethical, legal and professional responsibilities as practising technologists.

PART D: EXTERNAL REFERENCE POINTS AND BENCHMARKS

The QAA Computing Benchmark Statement

The latest QAA Subject Benchmark Statement for Computing was published in October 2019, and is applicable to this proposal. The design team has considered it in drawing up the structure of the programme, and is of the view that the proposal falls clearly within the scope of the benchmarks, as regards curriculum, teaching and learning, and the benchmarking standards themselves.

The benchmark describes the discipline of Computer Science in some detail and this programme falls squarely within the expressed characteristics. For example, the statement (p 5.) states that, "Computer science provides the necessary knowledge to understand and build computational systems" and states that its main characteristics include,

"fundamental computational concepts and algorithmic thinking, including recursive, distributed and parallel possibilities and attention to the benefits and the limitations of these; the role of these in devising approaches to areas of system design, problem solving, artificial intelligence, simulation and computational modelling

recognition of the relationships between the concepts of requirements, specification, design, programme and data (in all its forms) validation and maintenance, as well as the power of transformation and proof, and the place of these in computing

understanding the power behind abstraction, the potential of multiple levels of abstraction and the role this plays in computing.

PART D: EXTERNAL REFERENCE POINTS AND BENCHMARKS

understanding the opportunities for and the potential of automation, but also the proper balance between automation and how humans effectively interact with computers

recognising the role of redundancy, diversity and separation of concerns in achieving reliable, usable and secure systems, often in the presence of uncertainty recognising simplicity and elegance as useful concepts and principles”

All of the above is covered by this programme. The benchmark also addresses subject-specific skills and teaching, learning and assessment. The principles embodied with these section of the benchmark statement have been incorporated into the design of this programme

The benchmarks also contain (section 6) statements of the standards expected of graduates at threshold, typical and excellent levels. The team is of the view that the programme is structured in such a way that graduates will meet the required standards.

In designing this programme we have made reference to the SEEC credit level descriptors for HE, 2016 <http://www.seec.org.uk/wp-content/uploads/2016/07/SEEC-descriptors-2016.pdf>

and the QAA FHEQ descriptors to ensure that module and programme learning outcomes are expressed in a way that is appropriate to their level.

The UWE Enhancement Framework has helped to frame our thinking in terms of the context in which the students will learn, as has UWE 2030 strategy document.

Finally, we have been informed by our professional body, the British Computer Society which requires that ethical, professional and information security issues are surfaced in the programme.

PART E: REGULATIONS

A: Approved to University Regulations and Procedures

<https://www1.uwe.ac.uk/about/departmentsandservices/professionalservices/studentandacademicservices/regulationspoliciesquality/regulationsandprocedures.aspx>