Programme Specification

Award and title:

BSc (Hons) Computer Science

BSc (Hons) Computer Science with a year in industry[1]

School:	Science, Technology and Health
Subject area:	Computer Science
Entry from academic year:	2023-24
in the month(s) of	September
Awarding institution:	York St John University
Teaching institution:	York St John University
Delivery location:	York St John University
Programme/s accredited by:	BCS
Exit awards:	Certificate of Higher Education Computer Science Diploma of Higher Education Computer Science Diploma of Higher Education Computer Science with a year in industry BSc (Ord) Computer Science BSc (Ord) Computer Science with a year in industry
UCAS code / GTTR / other:	I100
Joint Honours combinations:	Not applicable
QAA subject benchmark statement(s):	Computing (March 2022)
Mode/s of study:	full time for 3 years part time for 6 years full time for 4 years (with year in industry)
Language of study:	English
Paired with Foundation Year	No
Study abroad opportunities:	No
Opt-in YSJU Placement Year opportunity:	No

Introduction and special features

Computer Science at York St John University is committed to developing employable graduates with relevant technical, professional and entrepreneurial skills to flourish in the post graduate environment. The programme is designed for those who want to develop systems that meet real world needs and is highly practical in its delivery and focus. The programme's content is designed to equip you with the knowledge and understanding of essential facts, and deploying appropriate practices, policies, and tools to specify, design, and implement a computing system.

As a student of this programme, you will be provided with the necessary technical and higher-level reasoning skills, qualities, and transferable skills essential for employment and further study. The programme will provide you with a rigorous education in core computational skills including applied mathematics,

[1] The Year in Industry programmes are available in full time study only

programming languages, algorithm design, system testing, systems design & analysis and the user experience, with optional modules in Privacy & Data Protection, Cloud Computing Security & Compliance, Smartphone App Design & Dev, Advanced Web Development and Immersive Computing for CS. Teaching is focussed on foundational design principles to enhance your ability to carry projects through from conceptualisation to realisation. To encourage the consolidation of knowledge, you will be offered continual opportunities throughout your study to apply learnt skills through a series of authentic assessments that engage real world challenges. This emphasis on real world problem solving is enhanced in level 5 through the Professional and Research Practices module, allowing you the opportunity to immerse and test yourself in either a commercial environment or a self-initiated entrepreneurial project.

In addition to specific knowledge and skills, you will be supported to develop key professional attributes through identifying suitable methods and implement principled solutions within a professional, legal, and ethical framework to address issues including data management and use, security, EDI, and sustainability and entrepreneurship. You will be supported to develop your skills through several activities including reflection on work-based practice to re-enforce your critical skills, addressing complex real-world situations through problem-based learning.

The programme is designed to support you in being:

- Adaptable to change;
- Astute in terms of problem solving;
- Innovative;
- Critical;
- Entrepreneurial;
- Client-centred;
- Ethical;
- Professional.

Special features of our programme

Some of the programme's uniqueness around teaching and learning strategy include a practical degree, a small number of students per session/class with practical content and research elements; an assessment strategy mainly focused on portfolio and industry-related project-based assessments.

Inclusivity within the programme: we welcome and celebrate the diversity of our students and staff, and we provide flexibility in how you demonstrate your knowledge through the wide range of assessment methods. In addition, the practical learning platforms are primarily virtual lab resources, dedicated hardware, and software that are free and open source to enable you to practice their learning at their convenience.

Dedicated Resources: you will study in our dedicated workspace, which serves as home "base" - each level has specialist labs with specialised hardware and software resources, including the range of cloud services and resources, our virtual lab resources on a dedicated/separate network allowing you to do what is required for in the degree programme tasks.

CPD: As part of continuous professional development, you will be offered professional certification courses and participation, including Microsoft certificates with access to the Microsoft tools and materials. Alongside the degree qualification, they will be supported to obtain industry-recognized certifications for various technologies to augment the degree and validate the skills needed to succeed across various computing related careers.

Learning support: You will be supported with appropriate learning resources including academic, administrative, and technical staff, dedicated computing and communication facilities which include software tools, and specific and general learning facilities including access to appropriate digital and print-based information and effective academic advice and guidance.

Sustainability: You will be introduced to a new practice of computational sustainability by building environmental and social sustainability projects and applications using computer science principles, methods, and tools and the use of open, private, and public cloud services, learning environments and data. You will

study modules such as Artificial intelligence, Data Analytics for Big Data analytics and Internet of Things; paradigms for building Cyber-Physical system applications.

A year in industry: You have the option to study full time with a year in industry. During the year in industry placement, you will be allocated a mentor from within the University, who will monitor your progress throughout the placement. This may include MS Teams/email conversations. There will be a minimum of one field visit which will include a conversation with the employer.

Future focussed: Our Computer Science programme will provide subject-specific and key transferable skills and a creative and ethical approach to a Computer Science career, equipping you with the critical and analytical knowledge to play your part in shaping the future.

The programme will provide you with:

- The ability to apply practical and analytical skills.
- Computer Science knowledge, understanding and skills
- The ability to self-manage a significant piece of work.
- Computational problem-solving and Intellectual skills
- Interpersonal and team working skills
- Critical self-evaluation of the process
- An underpinning of computation as a creative, problem-solving practice.
- A focus on formative philosophical discourses and ethics, within the industry and wider society
- A balanced focus on technical theory, practice, and ability to recognise the legal, social, ethical and professional issues around the subject.
- Professional practice and Entrepreneurship
- Integrated professional practice and certifications opportunities.
- Live projects working with and to industry specifications.
- Organised trips to experience a spectrum of applications of the subject.
- Team working opportunities within the programme, which reflect and prepare students for careers working in industry.

Admissions criteria

You must meet the University's general entry criteria for undergraduate study.

If your first language is not English, you may need to take an IELTS test or an equivalent qualification accepted by the University (see https://www.yorksj.ac.uk/international/how-to-apply/english-language-requirements/).

If you do not have traditional qualifications, you may be eligible for entry on the basis of Accredited Prior (Experiential) Learning (APL/APEL). We also consider applications for entry with advanced standing.

Programme aim(s)

The purpose of this programme is to provide you with an excellent educational experience with the necessary technical and higher-level reasoning skills that enables you to become a Computer Science expert/specialist, with multiple opportunities to learn and acquire professional certifications and accreditation.

Programme learning outcomes

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

Level 4

4.1 Demonstrate knowledge and understanding of essential facts, concepts, principles, and theories relating to computing and computer applications.

4.2 Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution.

4.3 Demonstrate the use of knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction, and the understanding of user focus.
4.4 Demonstrate ability to deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
4.5 Demonstrate knowledge and understanding of methods, techniques and tools for information modelling, management, and security.
4.6 Demonstrate an understanding of the link between theory and practice and ability to recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution

Level 5

5.1 Recognise the legal, social, ethical, and professional issues relating to computing technology and appropriate professional, ethical and legal practices, and standards.
5.2 Analyse, evaluate, and develop organizational computer systems and standards in core Computer Science subject areas such as Databases and Networks, that can be implemented across an organisation to reduce information and systems risk, identify, and mitigate vulnerability, and ensure organisational compliance.
5.3 Recognise, evaluate and mitigate risks or safety aspects that may be involved in the operation of computing and information systems within a given context.
5.4 Demonstrate a critical understanding of the personal, organisational and legal/regulatory context in which computer and information systems could be used, the risks of such use and the constraints that may affect how computer systems are implemented.
5.5 Apply the principles, methods, and tools of systems design to develop information systems that meet business needs.
5.6 Demonstrate critical knowledge and understanding of methods, techniques and tools for information modelling, management and security.

Level 6

6.1 Employ practical skills to develop advanced applications to solve a real-life problem with a critical evaluation of diligence to standards for secure software design, legal and ethical concerns.
6.2 Apply a high level of project management skills, technical knowledge, and creative techniques to the production of a final computer science project and report.
6.3 Engage with contemporary scholarship utilising research methodologies and deploying analytical skills to sustain a coherent intellectual critique on particular aspects of computer science and allied fields.
6.4 Deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.
6.5 Define a problem, research its background, understand the social context, identify constraints, and manage cost drivers to ensure fitness for purpose and evaluate outcomes.
6.6 Use appropriate theoretical and practical processes to specify, design, deploy, verify, and maintain information systems, including working with technical uncertainty.
6.7 Transfer techniques and solutions from one field of computer science to another and critically apply the principles of data and information management to the development of effective, ethical and secure computer system applications.
6.8 Deploy skills and knowledge to plan, engage in and apply research to Computing and related problems.

Programme structure

Code	Level	Semester	Title	Credits	Module status	
					Compulsory (C) or optional (O)	non-compensatable (NC) or compensatable (X)
COM4009M	4	1	Programming 01	20	C	X
COM4010M	4	1	Maths and Problem Solving	20	C	X
COM4011M	4	1	Security Systems and Products	20	C	X
COM4012M	4	2	Programming 02 – Programming for the web	20	C	X

COM4013M	4	2	Operating Systems	20	C	X
COM4014M	4	2	Software Engineering	20	C	X
COM5012M	5	1	Programming 03 – Systems Programming & Scripting	20	C	X
COM5013M	5	1	Database Systems	20	C	X
COM5014M	5	1	Computer Networks	20	C	X
COM5015M	5	2	Programming 04 - Advanced Programming	20	C	X
COM5025M	5	2	Artificial Intelligence	20	C	X
COM5016M	5	2	Professional and Research Practices	20	C	X
COM5018P	5	1&2	Year in Industry	0	C if year in industry	NC if year in industry
COM6016M	6	1+2	Dissertation	40	C	NC
COM6017M	6	1	The Internet of Things	20	C	X
COM6035M	6	1	Data Analytics	20	C	X
Choose 40 credits from the following optional modules:						
COM6030M	6	2	Immersive Computing	20	O	X
COM6020M	6	2	Privacy & Data Protection	20	O	X
COM6021M	6	2	Network Security Architecture and Operations	20	O	X
COM6023M	6	2	Advanced Web Development	20	O	X
COM6022M	6	2	Cloud Computing Security & Compliance	20	O	X
COM6031M	6	2	Smartphone App Design & Development	20	O	X

Please note that not all options may be available every year as they depend on student demand and staff availability.

Any modules that must be passed for progression or award are indicated in the table above as non-compensatable. A non-compensatable module is one that must be passed at the relevant level (with a mark of 40) in order to progress.

Learning, teaching and assessment.

Level 4 gives you the fundamental core knowledge and understanding of essential facts, concepts, principles relating to computing; providing you with a broad range of opportunities to develop core subject knowledge in the areas of programming for the web, mathematics, object-oriented programming, and software engineering. You will become familiar with common computer science terminology and well-versed in discipline-specific technical practices, methodologies, and theories. Teaching at this level comprises a range of immersive learning experiences such as lectures, seminars, workshops, teaching laboratories, Supported Open Learning (SOL), guest talks, and trips.

Level 5 will enable you to further develop your subject knowledge through modules such as Databases Systems, Computer Networks and Advanced Programming. You will undertake a Professional and Research Practices module allowing you to apply your skills in a 'live' setting, working for an established company or undertaking a self-initiated, possibly collaborative, entrepreneurial project or writing and acquiring professional certifications. This opportunity will enable you to apply and test the knowledge you have acquired so far through your degree and validate your skills needed to succeed across various Computer Science and related careers.

Optional year in industry programme route

You will have the option of undertaking a year in industry (sandwich year), in between levels 5and 6. Through this you will gain valuable experience in real employment. York St John University will provide you with support to help source a placement which meets your career aspirations; however, it is your responsibility to secure your own placement. Support will be available through the CPD framework, and central University

services such as the Careers and Employability Team. Students who undertake the year in industry often return for level 6 more focused on their studies and deemed more job ready by employers. You will be prepared for your placement year through activities in semester two, level 5, which will assist you in making preparations for applying for and undertaking a placement. This will include CV and cover letter writing, as well as interview skills. You will work with the central University services with the support of an academic tutor to identify placement opportunities. On achieving a year in industry placement, you will complete a negotiated learning agreement in the form of a learning contract, which will be negotiated with your host firm and agreed by an academic from the York St John University Computer Science Team. This will be logged by the University, and you will be expected to demonstrate your achievement while on placement through a portfolio of evidence. In order to undertake a year in industry placement you will need to have achieved the minimum requirements for progression at level 5 and will also have to satisfy the following criteria:

- You must have no outstanding modules from level 4 or 5.
- You must demonstrate a good level of professionalism in your academic conduct within the university, to the point where an academic from the computing team is willing to agree your suitability for the proposed placement.

During the year in industry placement, you will be allocated a mentor from within the University, who will monitor your progress throughout the placement. This may include MS Teams/email conversations. You will have a minimum of one field visit which will include a conversation with the employer.

Level 6 includes advanced modules in your field, allowing you to specialise and accent your learning via a choice of optional modules, for example: Privacy and Data Protection, Advanced Web Development, and Cloud Security, Privacy, and Compliance and Network Security Architecture and Operations. Accompanying this you will undertake a Dissertation - a year-long independent research project of your own design, agreed by and supported by an academic supervisor. This project may be in any existing or emerging field of computer science research and development. You are encouraged to consolidate technical learning and professional research interests through this Dissertation project. Teaching and learning at level 6 again incorporate the modes of delivery and activity encountered at levels 4 and 5, however, the emphasis at level 6 is on independent self-directed work that responds to learning within and across modules.

The teaching and learning environment of the programme is underpinned by a number of explicit pedagogic choices: small classes and small lab class sizes; so that you can get as much help when needed. Teaching and learning are based on a working with/co-creation rather than a teaching to approach – teaching has a strong practical element running through all modules within the degree.

Our approach to learning is holistic and practice focus. It will provide you a blend of theoretical and practical learning opportunities to enable you to apply practical and analytical skills synthesize information and ideas in an integrated way, so our learning experiences are authentic and relevant to your computer science role.

Our approach to learning is cooperative. You will work solo and together in small groups with other students, building supportive relationships, reflecting on your experiences, and mentoring each other to achieve your full potential.

The assessment strategy for the programme focuses on your analytical skills, ability to integrate what you learn in real-world contexts and enables a wide range of skills to be assessed fairly and in multi-faceted manner. You will be solving real-life problems that address global, social, political, and economic issues.

We use Technology Enhanced Learning to create a varied learning experience. Virtual Learning Environments provide you with opportunities to learn through online lectures, discussion groups, and online learning activities. You will be exposed to using virtualization and cloud computing technologies and specialised hardware equipment for your practices. Online library resources specific to your subject guides, databases, and eBooks, and eJournals are easy to access and help support your study.

During your programme you will be asked to do formative work that prepares you for assessment. This may be written or practical work. Formative work provides your academic assessors with opportunities to explore how you are doing and provides you with feedback to support your development. It also offers you the opportunity to review your progress, identify your strengths and areas of growth and ask for support where you think you need it. We may also ask you to provide feedback to the other students as part of reflective learning and coaching activities.

Progression and graduation requirements

The University's general regulations for undergraduate awards apply to this programme.

Any modules that must be passed for progression or award are indicated in the Programme Structure section

as non-compensatable.

Late result modules
Indicate any module codes where the result of the first attempt is not known in time for the June School Assessment Panels (or equivalent level progression point for non-standard entry points).

- COM5016M - Professional and Research Practices

Internal and external reference points

This programme specification was formulated with reference to:

- University mission and values
- University 2026 Strategy
- QAA Subject Benchmark for Computing (March 2022)
- Guidelines on course accreditation Information for universities and colleges (January 2020)

Date written: December 2021.