Programme Specification

BSc (Hons) Software Engineering
BSc (Hons) Software Engineering with a year in industry

School:	Science, Technology and Health
Subject area:	Computer Science
Entry from academic year:	2021-22
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:	Not applicable
Exit awards:	Certificate of Higher Education Software Engineering Diploma of Higher Education Software Engineering Diploma of Higher Education Software Engineering with a year in industry BSc (Ord) Software Engineering BSc (Ord) Software Engineering with a year in industry
UCAS code / GTTR / other:	II70
Joint Honours combinations:	Not applicable
QAA subject benchmark statement(s):	Computing 2016
Mode/s of study:	Undergraduate periods of study[1] for full time / part time Non-standard period of study as follows: • Part-time with a year in industry for 7 years (year in industry to be completed in one year)
Language of study:	English
Paired with Foundation Year	No
Study abroad opportunities:	No
Placement Year opportunity:	Yes

Introduction and special features

In a world where computation and computational devices are becoming ever more central to political, economic and social cohesion, it is logical that the activities of computer scientists will come to play an ever increasing role in defining the society of tomorrow. With this comes the recognition that technical decisions regarding software and hardware development are also ethical, political and philosophical decisions since the deployment of both hardware and software plays an increasing role in dictating how we interface with, and understand, ourselves both individually and as a society.

Software Engineering at York St John University is committed to developing employable graduates with relevant technical, professional and entrepreneurial skills that grasp the complexity of the above conditions. The programme is designed for those who want to develop systems that meet real world needs. Software Engineering at York St John University will provide you with a rigorous education in core computational

[1] The standard period of study will apply unless otherwise stated

skills including: applied mathematics, computational languages acquisition, algorithm design, unit testing, systems design & analysis, with optional modules *Cybercrime Security, Advanced Web Development, Data Visualisation, Software Solutions for Business* and *iOS Game Development*. You are also taught foundational design principles to enhance your ability to carry projects through from conceptualisation to realisation. To encourage the consolidation of knowledge, you are offered continual opportunities throughout your study to apply these learnt skills through a series of 'live' projects that engage real world challenges. This experience of real world testing is enhanced in level 5 through the *Professional Project* module, allowing you the opportunity to immerse and test yourself in either a commercial environment or a self-initiated entrepreneurial project.

Complementing this, you are also encouraged to enhance your understanding of the contextual discourses surrounding software engineering. Through exposure to modules exploring key critical discourses you are encouraged to consider the ramifications of how software engineering has come to alter how we relate to and understand ourselves as human beings and as a society. Key discourses include: the development of cybernetics, ubiquitous computing, post-humanism, ethics, ontology, phenomenology and sustainability.

The programme is designed to support you in being:

- Adaptable to change
- Astute in terms of problem solving
- Innovative
- Entrepreneurial
- Client-centred
- Ethical

Special features
A Software Engineering degree has to be future focussed. This programme will provide you with subject specific and key transferable skills and a creative and ethical approach to your chosen field, equipping you with the critical and analytical knowledge to play your part in shaping the future. The programme will provide:

- An underpinning of computation as a creative problem solving practice
- A focus on formative philosophical discourses, such as ethics in software engineering
- A balanced focus on technical theory and practice
- An involvement in substantial individual and group projects
- Integrated professional practice opportunities
- Guest speakers – from industry and academia to contextualise the academic work
- Live projects working with and to industry specifications
- Organised trips to experience a spectrum of applications of the subject
- Team working opportunities which mirror and prepare students for 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 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)

1. Engage with computation as a creative problem solving practice.
2. Provide students with opportunities to develop a set of communication and project management skills that enable them to recognise entrepreneurial opportunities and develop as a professional in a rapidly changing industry.
3. Instil a critical and analytical understanding of philosophical discourses including ethics, aesthetics and ontology so as to inform approaches to computation.
4. Provide students with a sound knowledge and understanding of the fundamental principles, techniques and technologies that underpin their chosen discipline within the field of computing.
5. Provide students with a sound knowledge of software engineering principles and applications across the software development lifecycle.
6. Provide students with the technical, intellectual, creative and investigative skills and knowledge required to be able to anticipate, adapt and innovate, contributing to the future development and application of computing technologies.
7. Instil in students the individual, team and professional team skills, including risk assessment and ethical responsibility, required of a computer practitioner to improve employability and allow them to engage with life-long learning.

Programme learning outcomes

Upon successful completion of the programme students will be able to:

Level 4

4.1 Demonstrate basic awareness of fundamentals, concepts, principles and theories of Software Engineering

4.2 Programme in a range of languages to solve common software engineering problems

4.3 Comprehend different data and information types and appropriate processing and management techniques

4.4 Demonstrate basic creative problem solving skills as applied through software engineering

4.5 Understand issues relating to legal, ethical and health and safety based concerns

4.6 Locate software engineering within a wider social and professional context

4.7 Demonstrate an understanding of the link between theory and practice

Level 5

5.1 Demonstrate critical understanding and knowledge of principles and techniques of software engineering

5.2 Analyse, design, develop and evaluate a range of projects that utilise core concepts of software engineering

5.3 Apply principles of software engineering to create a range of software applications

5.4 Demonstrate a knowledge of how software engineering fits within a broader socio-political context

5.5 Work effectively as part of a team

Level 6

6.1 Apply, analyse and critically evaluate advanced concepts, principles and approaches to complex problem solving

6.2 Employ practical skills to develop advanced applications

6.3 Critically evaluate and discern ethical, legal and social issues to specific situations

6.4 Critically evaluate and synthesise current knowledge to solve a software engineering research problem

6.5 Demonstrate a detailed subject knowledge and professional competence in the analysis, design and development of appropriate computational solutions

6.6 Apply a high level of project management skills, technical knowledge, and creative techniques to the production of a final software engineering project and report

6.7 Engage with contemporary scholarship utilising research methodologies and deploying analytical skills to sustain a coherent intellectual critique on particular aspects of software engineering

Programme structure

Code	Level	Semester	Title	Credits	Module status	
					compulsory or optional to take **C or O**	non-compensatable or compensatable **NC or X**
COM4001M	4	1	Programming 01	20	C	X
COM4002M	4	1	Mathematics and Problem Solving	20	C	X
COM4003M	4	1	Computer Systems Fundamentals	20	C	X
COM4005M	4	2	Programming 02	20	C	X
COM4006M	4	2	Software Engineering	20	C	X
COM4007M	4	2	Technology in Context	20	C	X
COM5001M	5	1	Programming 03	20	C	X
COM5004M	5	1	Databases and Networks	20	C	X
COM5005M	5	1	Software Engineering: Design Patterns	20	C	X
COM5007M	5	2	Mobile Application Development	20	C	X
COM5008M	5	2	Professional Project	20	C	X
COM5009M	5	2	Philosophies of Technology	20	C	X
COM5010P	5	1&2	Year in Industry	0	C if year in industry	NC if year in industry
COM6002M	6	1&2	Software Engineering Major Project	40	C	NC
COM6004M	6	1	Human Computer Interaction	20	C	X
COM6005M	6	1	The Internet of Things	20	C	X
COM6007M	6	2	Artificial Intelligence	20	O	X
COM6008M	6	2	Cybercrime Security	20	O	X
COM6009M	6	2	Advanced Web Development	20	O	X
COM6010M	6	2	Data Visualisation	20	O	X
COM6011M	6	2	iOS Games Development	20	O	X
COM6012M	6	2	Software Solutions for Business	20	O	X

Note that not all the optional modules will necessarily run each year.

Learning, teaching and assessment

Level 4 gives you the fundamental core knowledge required for your development as a computer scientist, providing you with a broad range of opportunities to develop core subject knowledge in the areas of programming, mathematics, software engineering and the critical discourses surrounding developments in the field of computing. You will become familiar with common software engineering terminology, and well-versed in discipline specific technical practices, methodologies and theories. Teaching at this level comprises of a range of immersive learning experiences such as lecturers, 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 in *networking*, *databases* and *mobile application development*. Coupled with these you will undertake a professional project allowing you to apply your skills in a 'live' setting, working for an established company or undertaking a self-initiated, possibly collaborative, entrepreneurial project. This opportunity will enable you to apply and test the knowledge you've acquired so far through your degree, affirming your learning through real world experience. At level 5 you will also undertake the *Philosophies of Technology* module which will enhance your knowledge of current relevant subject discourses and qualitative and quantitative research methods preparing you for your major project at level 6. Teaching at this level will incorporate all the previous modes at level 4, but with an emphasis on more self-directed and group project based work.

Optional year in industry programme route

You will have the option of undertaking a year in industry (sandwich year), in between level 5 and level 6. Through this you will gain valuable experience in real (paid / unpaid) 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 Skype/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: *Cybercrime Security, Software Solutions for Business, Advanced Web Development, Data Visualisation* and *iOS Games Development.* The specific optional modules offered each year will vary based on student numbers and available resources thus not all listed modules may be available each year. Accompanying this you will undertake a major 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 software engineering research. You are encouraged to consolidate your technical learning and professional research interests through this major project. Teaching and learning at level 6 again incorporates 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.

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).

- COM5008M Professional Project

Internal and external reference points

This programme specification was formulated with reference to:

- University Mission Statement [see page two]
- Strategic Plan 2015-20 [see page four]
- QAA subject benchmark statement
- Framework for Higher Education Qualifications

Date written / revised: 20/04/16
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