Course Specification

Course Summary Information		
1	**Course Title**	MSc Computer Science
2	**Course Code**	PT1551
3	**Awarding Institution**	Birmingham City University
4	**Teaching Institution(s)** (if different from point 3)	
5	**Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable)	

6	**Course Description**
	The MSc in Computer Science is a conversion course that provides you a broad and balanced introduction to computer science. The course aims to prepare you for technical roles in the IT industry by introducing the key technologies and skills needed for employment. The course has been designed to provide you with practical experience with models, techniques and tools from the forefront of the discipline that drive innovation in the design of software-based systems within this domain. The key topics taught on the course include Software Development (using the programming language in demand in the industry), Software Analysis and Design (techniques for designing large and complex software), Database Design and Development (backend storage for almost every IT installation in the world), Web Application Development (full stack web application development) and Artificial Intelligence (foundation of machine learning and the future of all contextual decision making). You will also learn the key skills of research, academic writing and project management required for study at masters' level. These skills are further developed and placed in the context of the dissertation. As a conversion course, it is assumed that you are starting fresh with little or no experience of computer science. The course offers several arrangements to ensure your smooth transition to computer science. This includes pre-semester week-long programming boot camp, where you will have the opportunity to develop fundamental understanding of the programming languages that will be taught in the course. Before starting the course, you will be directed to some online short courses that will help you to develop basic understanding of various technical aspects covered in the course. You will be allocated to a personal tutor, who will be there to monitor your personal and academic welfare. In weekly meetings, your personal tutor will review your progress, discuss goals and expectations, and help you to set action plans. The philosophy of the course is to promote lifelong self-learning by providing a curriculum that promotes a variety of approaches to study. The curriculum is designed to develop not only the academic knowledge, but also the engineering ethos and practical skills required by the modern computer science professional. Academic members of staff within the School of Computing and Digital Technology will teach topics and supervise projects according to their personal research interests. This will give you a cutting-edge experience, one that opens up new opportunities for career advancement in industry. For students who show an aptitude for research, there is also the possibility of continuing their studies on a PhD programme.

	The development of transferable skills is core to the learning strategy of the programme and is incorporated into work units and assessments: for example; team-working skills are fostered through the use of group, task-based practical projects. Keeping lab-books and submitting self-assessment documentation in support of personal performance fosters self-management and personal development. You are required to meet strict deadlines, which will help you to plan your overall workload and develop time management skills. The course structure and its content have been developed by taking into account input from various sources, including the curriculum philosophy of the School, suggestions from industrial partners, feedback from current students, QAA benchmark statements, British Computer Society (BCS) requirements for accreditation, and the Computer Science curriculum guidelines released by The Joint Task Force on Computing Curricula comprising the Association for Computing Machinery (ACM) and the IEEE Computer Society. This course is offered full-time, part-time and also full-time with the Professional Placement option to give you the opportunity to gain work experience as part of your degree.

7	**Course Awards**		
7a	**Name of Final Award**	**Level**	**Credits Awarded**
	Master of Science Computer Science	7	180
	Master of Science Computer Science with Professional Placement	7	240
7b	**Exit Awards and Credits Awarded**		
	Postgraduate Certificate Computer Science	7	60
	Postgraduate Diploma Computer Science	7	120

8	**Variations from the University Academic Regulations**
	N/A

9	**Delivery Patterns**		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time Sept/June	City Centre	12 months	PT1551
Part Time	City Centre	24 months	PT1552
Full Time with Professional Placement	City Centre	18 months	PT1553

10	**Entry Requirements**	
	Home:	The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk/.
	EU:	
	International:	
	Access:	N/A.

11	**Course Aims**
	MSc Computer Science is a conversion course that aims to prepare you, irrespective of your academic background, for a career in computing. More specifically the course is designed to provide a balance grounding in both the fundamentals of computer science and practical software and web application development skills. Moreover, the recent trend in the job market shows that there is an increasing demand for graduates with an interdisciplinary skillset including computing skills. This course will assist you to develop an interdisciplinary profile based on your non-computing first degree; thereby enable you to pursue a career involving the application of computing within your original professional field.

12	**Course Learning Outcomes**
	Knowledge and Understanding
1	Demonstrate knowledge and understanding of key concepts, theories, approaches, contemporary tools and technologies to produce solutions relevant to the domain of computer science to meet a set of agreed requirements.
2	Evaluate the quality, security and technical issues in large, complex software engineering and web engineering projects.
3	Appreciate the social, environmental, ethical, economic and commercial considerations that impact on the processes of developing computer systems.
4	Interpret the roles and responsibilities of a professional working within the computing profession.
5	Assess emerging trends in the field of software engineering and consider their potential for organisational and societal impact.
	Skills and Other Attributes
6	Apply appropriate software modelling and design techniques of computer-based systems.
7	Specify the requirements and practical constraints of computer-based systems considering commercial, economic, legal, ethical and social issues.
8	Work across disciplines to specify, design and construct computer-based systems both individually and as part of a group; managing project activities under time pressure.
9	Deploy effectively the tools, theories and methodologies used for the design, implementation and documentation of computer applications.
10	Structure and communicate ideas effectively, both orally and in writing to specialist and non-specialist audiences.

13	**Level Learning Outcomes**

MODULES	**Course Learning Outcomes**									
Level 7 Core Modules	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Software Development	✓					✓	✓		✓	
Software Analysis and Design	✓	✓	✓	✓		✓	✓	✓	✓	✓
Database Design and Development	✓					✓	✓		✓	
Web Application Development	✓					✓	✓		✓	

Artificial Intelligence Fundamentals	✓							✓	✓	✓
Research Methods and Project Management	✓		✓	✓				✓	✓	
Individual Master's Project	✓	✓	✓		✓	✓	✓	✓	✓	✓

Postgraduate Certificate Computer Science:
An exit award of Postgraduate Certificate Computer Science recognises the completion of 60 credits only (a combination of any 3 taught modules), through which you will have met at least the following Course Learning Outcomes: 1, 6, 7, 9.

Postgraduate Diploma Computer Science:

An exit award of Postgraduate Diploma Computer Science recognises the completion of 120 credits only (all 6 taught modules), through which you will have met the following Course Learning Outcomes: 1-4 and 6-10.

Master of Science Computer Science:

In order to achieve Master of Science Computer Science, you will need to complete 180 credits, i.e. you must successfully complete all 6 taught modules and the Individual Masters Project module, through which you will have met all the learning outcomes of the course.

Master of Science Computer Science with Professional Placement:

In order to achieve Master of Science Computer Science with Professional Placement, you will need to complete 240 credits. You must successfully complete the Professional Placement module in addition to the requirements for the Master of Science Computer Science.

14 Course Learning, Teaching and Assessment Strategy

Knowledge and understanding are acquired though formal lectures, tutor-led seminars, practical activities in lab sessions and tutorials, and a range of independent learning activities. Most of the learning in the course is based on practical sessions in lab environment. In this setting, you are either introduced to the theoretical concepts before class (e.g. through pre-recorded formal lectures or pre-session reading materials), the practical session then being used to deepen understanding through problem-solving activities facilitated by lecturers, or theoretical concepts are introduced during the lab sessions and you will deepen understanding through problem-solving activities immediately after the introduction of the theoretical concepts. Emphasis is placed on guided, self-directed and student-centred learning with a progressively increasing independence of approach, thought and process. This independent learning may include an element of peer review in order to evaluate the effectiveness of the learning.

The Research Methods and Project Management module, introduces the key skills of research, academic writing and project management required for study at masters' level. These skills are further developed and placed in the context of the dissertation.

Lectures are used to introduce themes, theories and concepts, which are further explored in seminars. eLearning is used, where appropriate, through the provision of online resources, discussion forums and other online activities. Advanced textbooks are used, together with professional material and journal articles, in order to ensure that you have a critical understanding of work at the forefront of the subject. The module guides direct students to a full range of resources, including books and journals, as well as locally created material.

	Analytical and problem-solving skills are further developed using a range of appropriate 'real' and 'theoretical' case-studies and problem-based learning scenarios. Practical, including lab-based, sessions are used to develop practical skills and to place theory in a practical context. Where appropriate, you will have access to commercial development environments. The development of transferable skills is core to the learning strategy of the programme and is incorporated into work units and assessments: for example; team-working skills are fostered through the use of group, task-based practical projects. Keeping lab-books and submitting self-assessment documentation in support of personal performance fosters self-management and personal development. You are required to meet strict deadlines, which enables you to plan your overall workload and develop time management skills. You will demonstrate the acquisition of work-related skills by using an assessment strategy that is reflective of industry needs. Knowledge and skills are assessed formatively and summatively, by a number of methods, including coursework, viva voce examination, online forums, podcasts, presentations, practical assessments, project work and timed examination. However, the focus will predominantly be on the use of coursework. Here, you will learn to present your ideas and showcase your work to a variety of audiences, both as members of a team or individually. You will also learn to present your ideas through written pieces of work for example by formulating proposals and reports. Guidance in academic studies will be provided in the form of a range of support mechanisms. This will include formative feedback from tutors as well as having access to a wide range of excellent support services that exist within the university. Assessment criteria are published both at a generic course level and to provide guidance for individual items of assessment. Anonymous marking systems, where applicable, are in place for coursework and formal examinations. In accordance with the University Regulations, you will be permitted two attempts at assessments. After first sit, if you are unsuccessful in any of assessments, there will be a final resit opportunity for which mark, provided that you pass the assessment, will be capped at 50%.

15	Course Requirements
15a	**Level 7:** ***In order to complete this course, you must successfully complete all the following CORE modules (totalling 180 credits):***

Module Code	Module Name	Credit Value
CMP7244	Software Development	20
CMP7243	Software Analysis and Design	20
CMP7245	Database Design and Development	20
CMP7246	Web Application Development	20
CMP7247	Artificial Intelligence Fundamentals	20
CMP7158	Research Methods and Project Management	20
CMP7200	Individual Master's Project	60

Level 6:

In order to qualify for the award of MSc Computer Science with Professional Placement, you must successfully complete all of the Level 7 modules listed above as well as the following Level 6 module:

Module Code	Module Name	Credit Value
PLA6004	Professional Placement	60

15b	Structure Diagram

Full-Time (September Start):

Year 1 1st Semester (Sep - Dec)	Software Development (20 credits)	Software Analysis & Design (20 credits)	Database Design & Development (20 credits)
Year 1 2nd Semester (Jan – May)	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)	Research Methods & Project Management (20 credits)
Year 1 3rd Semester (May – Sep)	Individual Master's Project (60 credits)		

Full-Time (June Start):

Year 1 1st Semester (May - Aug)	Software Development (20 credits)	Software Analysis & Design (20 credits)	Database Design & Development (20 credits)
Year 1 2nd Semester (Sep - Dec)	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)	Research Methods & Project Management (20 credits)
Year 1 3rd Semester (Jan – May)	Individual Master's Project (60 credits)		

Full-Time (January Start):

Year 1 1st Semester (Jan - May)	Software Development (20 credits)	Software Analysis & Design (20 credits)	Database Design & Development (20 credits)
Year 1 2nd Semester (June – Sep)	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)	Research Methods & Project Management (20 credits)
Year 1 3rd Semester (Sep – Jan)	Individual Master's Project (60 credits)		

Part-Time (September Start):

Year 1 1st Semester (Sep – Dec)	Software Development (20 credits)	Database Design & Development (20 credits)
Year 1 2nd Semester (Jan – May)	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)

Year 2 **1st Semester** **(Sep – Dec)**	Software Analysis & Design (20 credits)	
Year 2 **2nd Semester** **(Jan – May)**	Research Methods and Project Management (20 credits)	
Year 2 **3rd Semester** **(May – Sep)**	Individual Master's Project (60 credits)	

Part-Time (January Start):

Year 1 **1st Semester** **(Jan - May)**	Software Development (20 credits)	Database Design & Development (20 credits)
Year 1 **2nd Semester** **(Sept – Dec)**	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)
Year 2 **1st Semester** **(Jan – May)**	Software Analysis & Design (20 credits)	
Year 2 **2nd Semester** **(Sept – Dec)**	Research Methods and Project Management (20 credits)	
Year 2 **3rd Semester** **(Jan – May)**	Individual Master's Project (60 credits)	

Full-Time with Professional Placement (September Start):

Year 1 **1st Semester** **(Sep - Dec)**	Software Development (20 credits)	Software Analysis & Design (20 credits)	Database Design & Development (20 credits)
Year 1 **2nd Semester** **(Jan – May)**	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)	Research Methods & Project Management (20 credits)
Year 1 **3rd Semester** **(May – Sep)**	Individual Master's Project (60 credits)		
Year 2	Professional Placement		

1st Semester (Sep – Jan)	(60 credits)

Full-Time with Professional Placement (January Start):

Year 1 1st Semester (Jan - May)	Software Development (20 credits)	Software Analysis & Design (20 credits)	Database Design & Development (20 credits)
Year 1 2nd Semester (June – Sep)	Web Application Development (20 credits)	Artificial Intelligence Fundamentals (20 credits)	Research Methods & Project Management (20 credits)
Year 1 3rd Semester (Sep – Jan)	Individual Master's Project (60 credits)		
Year 2 1st Semester (Jan – May)	Professional Placement (60 credits)		

16	Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

Level 7

Workload

26% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	306
Directed Learning	314
Private Study	1180
Total Hours	1800

Balance of Assessment

Assessment Mode	Percentage
Coursework	97%
Exam	0
In-Person	3%