Course Specification

Course Summary Information		
1	**Course Title**	MSc Advanced Computer Science
2	**BCU Course Code**	PT1036
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)	BCS

6	**Course Description**
	The MSc Advanced Computer Science programme intends to develop your competence in using tools and techniques for producing computer systems solutions, from a sound mathematical and scientific base while appreciating the professional responsibilities and quality needed by industry. **What's covered in the course?** The course is designed to cover a number of advanced computing topics in computer science, namely, ontological engineering, service-oriented design, database design, data engineering, and mobile-application development. In addition, you will receive a solid grounding in research methods and project management before undertaking an individual project that provides an opportunity to demonstrate technical and general employability skills in preparation for career progression. More specifically, the individual project simulates typical graduate workplace tasks that require in-depth knowledge and skills in a specific area of computer science. This will include consideration of wider issues and the ability to manage activities and resources, as well as generate, implement and report on solutions to meet task objectives. Throughout your masters in computer science, you'll be supported by our expert teaching staff, all of whom have a wide range of research and industrial experience in areas such as intelligent systems, mobile computing, Semantic Web, machine learning and software engineering, which they use to enhance the curriculum.

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

8	Derogation from the University Regulations
	1. A maximum volume of 20 credits per course in a Master's degree (other than an integrated Master's degree) can be compensated. 2. No condonement of modules at Levels 4-7 is permitted.

9	Delivery Patterns		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time September	City Centre	12 months	PT1036
Full Time January	City Centre	12 months	PT1036
Part Time September	City Centre	20 months	PT1155
Part Time January	City Centre	20 months	PT1155
Full Time January 'with Professional Placement'	City Centre (and placement provider)	18 months	PT1333

10	Entry Requirements
	The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk/.

11	**Course Learning Outcomes**
Knowledge and Understanding	
1	Demonstrate knowledge and understanding of essential facts, concepts, theories and principles of Web, Databases and Mobile computing and research principles; including: high-level programming languages; program design; system development; software design methodologies; web and open systems technologies.
2	Understand the technical issues in large, complex web and mobile software projects.
3	Appreciate the social, environmental, ethical, economic and commercial considerations that impact on the processes of developing computer systems.
4	Have an appreciation of advanced web and mobile computer based systems.
Cognitive and Intellectual Skills	
5	Apply the software modelling and design of computer-based systems for the purposes of comprehension, communication and the understanding of trade-offs.
6	Specify the requirements and practical constraints of computer-based systems (including mobile, databases and web software and systems) in their context.
7	Recognise and critically analyse criteria and specifications appropriate to specific problems and plan strategies for their solution.
8	Evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem the ability to recognise any risks or safety aspects that may be involved in the operation of computing equipment within a given context.
Practical and Professional Skills	
9	Specify, design and construct computer-based systems (including web and mobile software systems).
10	Deploy effectively the tools, theories and methodologies used for the construction, design, implementation and documentation of mobile and web systems, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.
11	Work as a member of a development team, recognising the different roles within a team and different ways of organising teams to a professional competence level.
12	Interpret and critically evaluate knowledge, concepts and ideas and/or forms of creative expression, to deliver a professional computer based system, using appropriate tools and techniques.
Key Transferable Skills	
13	Use effective information-retrieval skills (including the use of browsers, search engines and journals).
14	Apply numeracy in both understanding and presenting cases involving a quantitative dimension.
15	Appreciate the need for continuing professional development (CPD) in recognition of the need for lifelong learning and career development, including awareness of the rapid rate of change in the IT industry and the need for practitioners continually to update their skills and knowledge.
16	Manage learning and self-development, including time management and the development of organisational skills.

12	**Course Requirements**
12a	**Level 7:** ***In order to complete this course a student must successfully complete all the following CORE modules (totalling 180 credits):***

Module Code	Module Name	Credit Value
CMP7163	Advanced Mobile Computing	20
CMP7174	Service Oriented Architecture	20
CMP7214	Advanced Databases	20
CMP7161	Advanced Data Science	20
CMP7173	Semantic Web and Knowledge Engineering	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 Advanced Computer Science with Professional Placement, a student 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

12b Structure Diagram

The modules in the course are worth 20 credits each (except where indicated).

September starts

Year 1 1st Semester (Sept – Dec)	Service-Oriented Architecture	Advanced Databases	Semantic Web and Knowledge Engineering
Year 1 2nd Semester (Jan – May)	Advanced Mobile Computing	Advanced Data Science	Research Methods and Project Management
Year 1 3rd Semester (May- Sept)	Individual Master's Project (60 credits)		

January starts

Year 1 1st Semester (Jan – May)	Advanced Mobile Computing	Advanced Data Science	Research Methods and Project Management
Year 1 2nd Semester (June - Sept)	Service-Oriented Architecture	Advanced Databases	Semantic Web and Knowledge Engineering
Year 2 1st Semester (Sept - Jan)	Individual Master's Project (60 credits)		

Part-time mode (September intake)

Year 1 **1st Semester** **(Sept – Dec)**	Service-Oriented Architecture	Advanced Databases
Year 1 **2nd Semester** **(Jan – May)**	Advanced Mobile Computing	Advanced Data Science
Year 2 **1st Semester** **(Sept – Dec)**	Semantic Web and Knowledge Engineering	
Year 2 **2nd Semester** **(Jan – May)**	Research Methods and Project Management	Individual Master's Project (60 credits)
Year 2 **3rd Semester** **(May – Sept)**		

Part-time mode (January intake)

Year 1 **1st Semester** **(Jan – May)**	Advanced Mobile Computing	Advanced Data Science
Year 1 **2nd Semester** **(Sept – Dec)**	Service-Oriented Architecture	Advanced Databases
Year 2 **1st Semester** **(Jan – May)**	Research Methods and Project Management	
Year 2 **2nd Semester** **(Sept – Dec)**	Semantic Web and Knowledge Engineering	Individual Master's Project (60 credits)
Year 3 **1st Semester** **(Jan – May)**		

Professional Placement – January start (full time)

Year 1 **1st Semester** **(Jan – May)**	Service-Oriented Architecture	Advanced Databases	Semantic Web and Knowledge Engineering
Year 1 **2nd Semester** **(June - Sept)**	Advanced Mobile Computing	Advanced Data Science	Research Methods and Project Management
Year 2 **1st Semester** **(Sept - Jan)**	Individual Master's Project (60 credits)		
Year 2 **2nd Semester** **(Jan - May)**	Professional Placement (60 credits)		

Professional Placement – September start (full time)

Year 1 1st Semester (Sept - Dec)	Service-Oriented Architecture	Advanced Databases	Semantic Web and Knowledge Engineering
Year 1 2nd Semester (Jan - May)	Advanced Mobile Computing	Advanced Data Science	Research Methods and Project Management
Year 2 1st Semester (May - Sept)	Individual Master's Project (60 credits)		
Year 2 2nd Semester (Sept - Jan)	Professional Placement (60 credits)		

13 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 modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

Level 7

Workload

17% Time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	306
Directed Learning	368
Private Study	1126
Total Hours	1800

Balance of Assessment

Assessment Mode	Percentage
Coursework	89%
Exam	0
In-Person	11%