# Course Specification
# Part A

# MSc Computer Science
# EECT043

## Faculty of Engineering, Environment and Computing
## School of Computing, Electronics and Mathematics

## Academic Year: from 2021/22

Please note: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. We regularly review our course content, to make it relevant and current for the benefit of our students. For these reasons, course modules may be updated. More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the Module Information Directory (MID), student module guide(s) and the course handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

Template Revised August 2018

**PART A Course Specification (Published Document)**

**MSc Computer Science**

## 1. Introduction

MSc Computer Science provides a route to suit varying cultural and computing backgrounds. The programme also offers potential career aspirations and opportunities in the computing or IT related fields, such as computer system designers, programmers, consultants or researchers. The graduates are to develop not only the core technical competency in building computer systems, but also the key technological advancement in artificial intelligence, machine learning, big data, cloud systems, internet security as well as web-based and mobile applications.

The course emphasises on not only the underlying theories of Computer Science but on the practical application of these theories, to provide solutions to real-world problems, ensuring that our graduates are equipped with skills and knowledge in seeking employment in the technological based workplace or as further their academic research careers.

The course covers the following key topics to reflect the latest technologies and employment trends in the field of computer science:

- Artificial neural networks
- Machine learning
- Big data
- Computer system security
- Web applications and cloud deployment
- Mobile application development
- Agile approach to team collaboration

The uniqueness of the course includes:

- A novel approach to learning in a Activity Led Learning (ALL) group-based software development project with access to the industrial strength collaboration coding platforms, such as Github, and agile concepts for building modern computer-based systems;
- Research inspired teaching to enrich learning experience from a team of academic researchers (such as in individual research project), whose research excellence has been recognised in the Research Excellence Framework (REF) in 2014;
- State-of-the-art facilities in the modern Engineering and Computing Building with laboratories are equipped with the latest workstations and software packages;
- Opportunities to participate in field trips and Collaborative Online International Learning (COIL) projects, to interact online with students at universities overseas on projects;
- Support and employment advice from careers advisors with talks and workshops;
- Culturae Mundi and Linguae Mundi services which run events and courses to celebrate the multiculturalism and multilingualism present on campus.

For students in today's competitive employment markets having work experience can significantly enhance employment prospects. For this reason, the course offers students the opportunity to undertake a work placement, extending the main provision to a two-year course. The work placement could be International or UK with a focus which may be industry or research. Following a selection process within the first semester and subject to securing an approved placement opportunity, students would move onto the two-year course. International students who are interested in a work placement will be supported in completing an application for extending their Tier 4 visa by international student support services. Upon completion of their placement, students will return to complete the course and the final project for the full award.

## 2 Available Award(s) and Modes of Study

| Title of Award | Mode of attendance | UCAS Code | FHEQ Level |
|---|---|---|---|
| MSc in Computer Science | 1 Year FT On-campus<br>2 Year PT On-campus<br>2 years with Work Placement. | | 7 |
| PG Diploma in Computer Science | Fall-back | | 6 |
| PG Certificate in Computer Science | Fall-back | | 5 |

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|---|---|---|---|
| **3 Awarding Institution/Body** | Coventry University | | |
| **4 Collaboration** | | | |
| **5 Teaching Institution and Location of delivery** | Coventry University | | |
| **6 Internal Approval/Review Dates** | Date of approval: 02/2019<br>Date for next review: 2027/2028 | | |
| **7 Course Accredited by** | | | |
| **8 Accreditation Date and Duration** | Date of latest review: 03/2014 for the cohort of 2018-19; expired on 03/2019 | | |
| **9 QAA Subject Benchmark Statement(s) and/or other external factors** | The MSc Computer Science degree has been designed in line with the QAA benchmarks and British Computer Society (BCS) requirements will be submitted to accreditation for meeting requirements of CITP Further Learning and partial fulfilment for CEng/CSci.<br><br>Quality Assurance Agency for Higher Education (QAA) subject benchmarking statement for Master's degrees in Computing, which can be accessed at: http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-masters-degree-computing.pdf?sfvrsn=c490f681_16 | | |
| **10 Date of Course Specification** | Date of last revision: 02/2019<br>Date of latest revision: 01/2020 | | |
| **11 Course Director** | Dr Yih-Ling Hedley | | |

## 12 Outline and Educational Aims of the Course

The main educational aim of the MSc Computer Science course includes as follows:

- To deliver up-to-date theoretical and practical subjects across a range of focussed areas of computer science;
- To apply the emerging methods, tools and techniques in the emerging technologies relating to computer-based systems;
- To provide specialist skills and in-depth knowledge essential for graduates to develop and adapt to the challenges in the field;
- To develop skills and knowledge acquired through previous study and experience to enhance students' technical, transferable and professional skills and, thereby, their wider employment prospects;
- To develop the understanding in the central problems of research in applied and theoretical computing as effective independent researchers and/or consultants in their chosen specialised areas;
- To enhance the awareness of the professional, legal, ethical and social issues along with commercial risk and management in the role of a computing professional.

## 13 Course Learning Outcomes

On successful completion of the course a student will be able to:

1. Critically evaluate computation complexity associated with programming algorithms to deliver effective solutions to real-world problems;

2. Critically evaluate computer architecture and networked system solutions along with their related security issues and threats;
3. Develop relevant technical skills in emerging technologies to adapt to the challenges in the computing related field in a global context;
4. Develop a wide range of postgraduate level professional and transferable skills in building computer-based systems in a team work environment;
5. Develop the awareness of professional, social, ethical, and legal issues along with commercial risk and management for computer-based systems;
6. Develop research skills required for advanced computer science topics selected according to the interests of individual students;

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**14 Course Structure and Requirements, Levels, Modules, Credits and Awards**

The course structure reflects its main aims and has been designed to deliver the latest technologies and meet employment trends in the field of computer science. The modules provide the critical understanding, comprehensive knowledge and technical skills of the core computer science areas covered by the course. The individual research project will require the students to conduct research into and analysis of the current issues and undertake a substantial work in addressing those issues.

The course adopts a combination of lectures, lab practical work as well as in-class discussions and presentations. Modules will be delivered as a combination of lectures, computer laboratory sessions, online learning, seminar discussions and tutorials. These are designed and set by the module leaders reflecting the specific topics with the aim of maximising attainment and learning.

**Cascade of Awards:**

MSc in Computer Science
↓
Postgraduate Diploma in Computer Science
↓
Postgraduate Certificate in Computer Science

To achieve the award of Master's degree from study on the programme, a student must achieve the minimum credits specified in the University academic regulations.

The requirement for a MSc award in Computer Science is as follows:

1. Achievement of the full curriculum, 180 CATS credits comprising all of the taught modules described in the programme of study

The requirement for a Postgraduate Diploma award in Computer Science is as follows:

1. Achievement of 120 credits comprising all of the taught modules described in the programme of study

The requirement for a Postgraduate Certificate award in Computer Science is as follows:

1. Achievement of 60 credits comprising any taught modules described in the programme of study

Modules within the course, their status (whether mandatory or options), the levels at which they are studied, and their credit value are identified in the table below.

Please note that this course could be delivered in block format.

| Credit Level | Module Code | Title | Credit Value | Mandatory/ Optional | Course Learning Outcomes | * Semester |
|---|---|---|---|---|---|---|
| 7 | 7026CEM | Security of Emerging Connected Systems | 15 | Mandatory | 1, 2, 3 | 2 |
| 7 | 7047CEM | Software Development Project | 30 | Mandatory | 1, 3, 4, 5 | 2 |
| 7 | 7051CEM | Web Applications and AI | 15 | Mandatory | 1, 3 | 1 |
| 7 | 7052CEM | Mobile Platforms and Application Development | 15 | Mandatory | 1, 3 | 2 |
| 7 | 7088CEM | Artificial Neural Networks | 15 | Mandatory | 1, 3 | 1 |
| 7 | 7090CEM | Computer Architecture and System Programming | 15 | Mandatory | 1, 2, 3 | 1 |
| 7 | 7091CEM | Machine Learning and Big Data | 15 | Mandatory | 1, 3 | 1 |
| 7 | 7151CEM | Computing Individual Research Project | 60 | Mandatory | 1, 2, 3, 5, 6 | 3 |

* The running order of the modules is subject to change.

During semester 1, students who have expressed an interest in undertaking a work placement should begin the application process for placement opportunities. Students have the responsibility for securing a placement, but they will be supported throughout the application process by a specialist employer engagement team. The university will work with employers to identify opportunities. Subject to securing a placement, the International Student Support team will work with international students to obtain UK study visa extensions. Visas required to work in other countries will be the responsibility of the student.

The course is structured so that students complete two semesters of taught modules and then spend three semesters on placement. During this time students would be enrolled onto modules 7102CEM Extended Masters Work Placement A, 7103CEM Extended Masters Work Placement B and 7104CEM Extended Masters Work Placement C. The modules are zero credit and do not contribute to the classification or name of the award but must be passed to complete the placement. Upon completion of the work placement, students are expected to return to Coventry to complete the final semester during which time they undertake their project module. Successful completion of the Work Placement is reflected in the final student transcript.

| Credit level | Module Code | Title | Credit Value | Mandatory/ Optional | Course Learning Outcomes |
|---|---|---|---|---|---|
| Subject to securing an appropriate placement opportunity and fulfilling the selection requirements, students will be transferred to the two-year course and the Work Placement modules listed below are to be taken. | | | | | |
| 7 | 7102CEM | Extended Masters Work Placement A | 0 | Optional | |
| 7 | 7103CEM | Extended Masters Work Placement B | 0 | Optional | |
| 7 | 7104CEM | Extended Masters Work Placement C | 0 | Optional | |

The work placement is to be taken over three semesters and prior to the final semester of the course.

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**15 Criteria for Admission and Selection Procedure**

An applicant will normally be expected to possess at least one of the following:

- An honours degree or an equivalent qualification in a computing discipline
- An unclassified degree in computing plus professional experience within the field of computing;

Students whose first language is not English must demonstrate proficiency in the English language equivalent to IELTS 6.5. Alternatively students may be admitted with IELTS 6.0 if they attend and pass a compulsory five week pre-sessional English course, operated by Coventry University, before joining their master's programme.

Applications involving other UK or overseas qualifications, mature candidates, or candidates with experience are welcome and will be considered on their merit as below:

- Applications from those not possessing the equivalent of an honours degree in computing related subject will be considered on individual merit and decisions will be based on careful evaluation of the capacity of the applicant to complete the programme successfully;
- The programme is subject to the general University admission procedures and access policies. A wide range of academic backgrounds is deemed suitable for entry to the programme. However, careful monitoring of applications to ensure that applicants are suited to the programme takes place. Where necessary and possible, applicants are interviewed, especially those who do not appear to meet standard admissions criteria;
- Accreditation for Prior Learning (APL) is in accordance with University regulations;
- The accreditation for Prior Experiential Learning (APEL) will only be awarded for achievements equivalent to masters' level.

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**16 Academic Regulations and Regulations of Assessment**

This Course conforms to the standard University Academic Regulations Postgraduate Mode R.

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## 17 Indicators of Quality Enhancement

The Course is managed by the School of Computing, Electronics and Mathematics (CEM) Board of Study of the Faculty of Engineering, Environment and Computing (EEC).

The Programme Assessment Board (PAB) for the EEC Faculty is responsible for considering the progress of all students and making awards in accordance with both the University and course-specific regulations.

The assurance of the quality of modules is the responsibility of the Boards of Study which contribute modules to the course.

External Examiners have the opportunity to moderate all assessment tasks and a sample of assessed work for each module. They will report annually on the course and/or constituent modules and their views are considered as part of the Course Quality Enhancement Monitoring (CQEM). Details of the CQEM process can be found on the Registry's web site.

Students are represented on the Student Forum, Board of Study and Faculty/School Board, all of which normally meet two or three times per year.

Student views are also sought through module and course evaluation questionnaires.

The QAA's Higher Education Review undertaken in February 2015 confirmed that Coventry University meets the UK expectations regarding the:

- setting and maintenance of the academic standards of awards;
- quality of student learning opportunities;
- quality of the information about learning opportunities;
- enhancement of student learning opportunities

The assurance of the quality of modules is the responsibility of the Board of Study (BoS) which contribute modules to the courses. The SAB and PAB for the Faculty of EEC are responsible for considering the progress of all students and making awards in accordance with both the university and course-specific regulations.

Students are represented on the Student Forum, BoS and Faculty Board, all of which normally meet two or three times per year. Student views are also sought through module evaluation questionnaires.

External Examiners are appointed for all named University awards. The role of the External Examiner at module level is to ensure that academic standards are in line with national norms for the subject. External Examiners report annually on the programme and their views are considered as part of the Course Quality Enhancement Monitoring report (CQEM). Details of the CQEM process can be found on the Registry's web site.

Lecturers, guest speakers, case studies and web materials are used when appropriate to ensure that the content of the MSc programme remains valid and contemporaneous, drawing on relevant expertise from within the course team. Research activity and interests, relevant scholarly and consultancy activities will be used to inform the module content within the MSc programme.

There is a diverse and active range of research activities influencing programmes in most areas of the Faculty. All staff teaching on the course is actively engaged in research directly related to the content of the module in which they are engaged. The last Research Excellence Framework (REF 2014) resulted in the following ratings for Computer Science & Informatics: 5% World-leading, 37% Internationally Excellent, 55% International Recognition, 3% National Recognition.

There is also a strong and regular industry input to the subject-base of the course. These include the links with employers through the CEM Industry Advisory Board (IAB), industry-focused collaborative research initiatives. Graduate destinations for the course have achieved 100% in 2017-2018.

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## 18 Additional Information

Enrolled students have access to additional, key sources of information about the course and student support including:

- Faculty Student Handbook
- Software Engineering Course Handbook
- Module Guides
- Postgraduate Course Page and Module Webs
- Module Information Directory

The University and Faculty support is also available via links as follows:

- University library
- Sigma Maths and Stats Support Centre (in the University library), also at: https://www.coventry.ac.uk/study-at-coventry/student-support/academic-support/sigma-maths-and-stats-support/
- Centre of Academic Writing (in the University library), also at: https://www.coventry.ac.uk/study-at-coventry/student-support/academic-support/centre-for-academic-writing/
- EEC Student Web: https://share.coventry.ac.uk/students/EC/Pages/Home.aspx
- Coventry University Student Portal: https://share.coventry.ac.uk/students/Pages/Index.aspx

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