



LEEDS
BECKETT
UNIVERSITY

Course Specification

MSc Advanced Computer Science

Course Code: MADCS

2022/23

MSc Advanced Computer Science (MADCS)

Applicant Facing Course Specification for 2022/23 Postgraduate Entrants

Confirmed at 01/2022

General Information

Award	Master of Science Advanced Computer Science
Contained Awards	Postgraduate Diploma Advanced Computer Science Postgraduate Certificate Advanced Computer Science
Awarding Body	Leeds Beckett University
Level of Qualification and Credits	Level 7 of the Framework for Higher Education Qualifications, with 180 credit points at Level 7 of the Higher Education Credit Framework for England.
Course Lengths and Standard Timescales	Start dates will be notified to students via their offer letter. The length and mode of delivery of the course is confirmed below: <ul style="list-style-type: none">• 1 year (full time, campus based)• 2 years (full time, campus based, plus sandwich placement option)• 2 years (part-time, campus based)
Part Time Study	PT delivery is usually at half the intensity of the FT equivalent course, although there may be flexibility to increase your pace of study to shorten the overall course duration. Some modules may be delivered in a different sequence to that defined within this information set but the modules offered within each level are consistent. Please note that the work placement option is not generally available to PT students.
Location(s) of Delivery	Headingley Campus, Leeds
Entry Requirements	Admissions criteria are confirmed in your offer letter. Details of how the University recognises prior learning and supports credit transfer are located here: https://www.leedsbeckett.ac.uk/student-information/course-information/recognition-of-prior-learning/

Admissions enquiries may be directed to:
AdmissionsEnquiries@leedsbeckett.ac.uk.

Course Fees

Course fees and any additional course costs are confirmed in your offer letter. Fees enquiries may be directed to
Fees@leedsbeckett.ac.uk.

Timetable Information

Timetables for Semester 1 will be made available to students during induction week via:

- i) The Student Portal (MyBeckett)
- ii) The Leeds Beckett app

Any difficulties relating to timetabled sessions may be discussed with your Course Administrator.

Policies, Standards and Regulations (www.leedsbeckett.ac.uk/academicregulations)

There are no additional or non-standard regulations which relate to your course.

Key Contacts

Your Course Director

Kiran Voderhobli

Your Academic Advisor

Each student will be allocated an Academic Advisor once they commence their studies at the University. The Academic Advisor will be a member of the Computing Academic Staff.

Your Course Administrator

Helen Turpin - h.turpin@leedsbeckett.ac.uk

Sandwich Placement Information

Summary

Leeds Beckett is dedicated to improving the employability of our students and one of the ways in which we do this is to support our students to gain valuable work experience through work based placements. Our Placements team have developed strong links with companies, many of whom repeatedly recruit our students into excellent placement roles. Our team is dedicated to supporting students through every stage of the placement process. Details of how to contact our placement teams may be found here:

www.leedsbeckett.ac.uk/studenthub/placement-information

Length

Minimum 30 weeks, undertaken at the end of semester 2 after the completion of taught modules. On returning from placement students will be expected to

complete their Dissertation. This is only available for FT students starting in September.

Location

Students are responsible for obtaining their own placement, with assistance from the Placements team. The locations will vary, dependent on the opportunity.

Professional Accreditation or Recognition Associated with the Course**Professional Body**

N/A

Course Overview**Aims**

The course aims to provide students with an advanced skill set in a range of current topics. It also places an emphasis on project management skills along with development of professional and technical attributes. The course prepares students to work with cutting-edge technologies in industry by blending theory and practice. The course addresses some themes of STEM (Science, Technology, Engineering, and Mathematics), and therefore aimed at contextualising knowledge to real-time scenarios and application to problems in industry. The course is designed to address the skills gap in industry and the heavy demand for Computer Science graduates.

The word “advanced” is used to describe the sophistication brought about by the skill set covered in the modules. The course covers some of the themes of the “fourth-industrial revolution” that is dependent on Cloud Computing, IoT, Smart Systems, Robotics etc. The course enhances the knowledge students already have from a related UG degree. It builds upon their existing knowledge in Software Engineering, Networking Systems, Communications, systems development, and AI. For example, students with an undergraduate degree in Computer Science would have learnt the foundations of AI. The MSc course explores this further and goes deeper in the Smart Systems module and Intelligent Systems and Robotics Module. Furthermore, dissertation is used to reinforce the advanced technical skills gained by the students. Rather than pursue a generic computing project, students will be directed and motivated to work on advanced concepts in computer science that are drawn from expertise within the school. It is worth mentioning that although Computer Science traditionally contains a lot of theory, our approach is also very applied. It encourages students to think about problem solving in industrial contexts.

The course provides a deep understanding of the theory and practice of the advanced areas in Computer Science and their application to industrial and research contexts. The course also provides a pathway for our students who have completed BSc (Hons) Computer Science, to pursue a Masters degree in advanced Computer Science.

On completion of the course, a student must be able to reflect upon technological advancements and apply expert knowledge to real-life complex computational problems.

Course Learning Outcomes

At the end of the course, students will be able to:

1	Use originality in the application of knowledge in a professional environment, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline of computer science.
2	Evaluate and critique methodologies, practices, and advancements within the field of computer science.
3	Demonstrate self-direction, originality and creativity in tackling and solving practical computer science related problems which have been planned and implemented within a global professional, legal, social, and ethical framework.
4	Exercise initiative and personal responsibility in dealing with complex and unpredictable situations, making sound judgements, communicating their conclusions clearly to specialist and non-specialist audiences.

Teaching and Learning Activities

Summary

Learning and teaching methods provide high quality learning opportunities that enable students to demonstrate achievement of the learning outcomes of the Course through the learning outcomes of those modules. By the end of the course, students will have developed high levels of personal responsibility, initiative, creativity, be able to demonstrate originality and critical awareness of current problems and new insights informed by the forefront of the computer science discipline. Progressive use of dealing with complex and later unpredictable situations in projects and problem-based learning will allow students to achieve this and take on greater self-direction of their learning.

The assessment strategy and design recognise the computer industry as a source of inspiration and seeks where possible to align academic work with professional practice. The teaching and assessments will ensure that students are able to demonstrate deeper learning, act independently, collaborate more effectively, deal with complex issues in a systematic way, think critically, use literature more effectively, synthesise and reflect critically.

The Course employs a wide range of learning opportunities and teaching methods including the use of lectures, tutorials, practical work, simulations, dissertation, etc. Advantage will be taken of both technology and supportive activities to ensure that effective learning takes place. The VLE allows scope for students to access learning materials outside their contact hours, providing support for the remainder of the 200 notional learning hours for each 20 credit module. Students should feel that they are being challenged by the range and level of activities and assessments: students should also feel supported and know how to access that support.

The dissertation expects students to fulfil a project that addresses an advanced problem in Computer Science. It is driven in a manner that requires academics to contribute topics from their research area or a problem that is heavy on Computer Science.

Practical Focus

The course follows a very hands-on approach with practical elements to help students put theory and practice together. The tutorials are all in a lab environment where students work on practical tasks given to them on a weekly basis. We rely on specialist state-of-the-art resources like sandboxed labs, high-end PCs, Robotics lab, and our own cloud infrastructure to deliver a curriculum that is enhanced with practical learning elements. For example:

- Our Network Management module is taught using an Industry Standard Network Management tool on a live network. Students can perform analysis on live network traffic and diagnose problems based on the statistics.
- Robotics module is delivered in the dedicated robotics lab using a Staubli robot.
- Smart systems module teaches Software Engineering in context of Systems programming and IoT.
- In Cloud Computing module students will learn to deploy services on the Cloud. Software Engineering for Service Computing includes practical elements of developing Software Components for the cloud.
- Applied Data Analytics covers Intelligent Systems, Artificial Intelligence and Machine Learning. All these are taught using appropriate software tools.
- The Dissertation **must** be based on a technical product development and will involve many hours of practical development and/or empirical analysis.

Assessments in modules will test a student’s technical knowledge by expecting them to demonstrate their practical knowledge even in their course work.

Your Modules

This information is correct for students progressing through the programme within standard timescales. Option modules listed are indicative of a typical year. There may be some variance in the availability of option modules. Students who are required to undertake repeat study may be taught alternate modules which meet the overall course learning outcomes. Details of module delivery will be provided in your timetable.

Full Time Delivery

Level 7			
Semester 1	Core (Y/N)	Semester 2	Core (Y/N)
Smart Systems (20 credits)	Y	Project Management (20 credits)	Y
Research Practice (20 credits)	Y	Intelligent Systems and Robotics (20 credits)	Y
Network Management (20 credits)	N	Software & Systems (20 credits)	N

Level 7			
		Negotiated Skills Development (20 credits)	N
		Applied Data Analytics (L6 module – 20 credits)	N
Cloud Computing Development (L6 module – 20 credits)	N	Software Engineering for Service Computing (20 credits)	N
		Dissertation (60 credits)	Y

The option modules listed are indicative of a typical year. There may be some variance in the availability of option modules.

Elective modules are as follows (students pick one Elective module per semester, based on availability/offering for the semester):

- Cloud Computing Development (20 credits) – **NOT** available for students who have completed BSc (Hons) Computer Science at Leeds Beckett University.
- Network Management (20 credits) – *Students who have done BSc (Hons) Computer Science at Leeds Beckett University can ONLY do this module and NOT Cloud Computing*
- Software Engineering for Service Computing (20 credits)
- Applied Data Analytics (20 credits) **NOT** available for students who have completed BSc (Hons) Computer Science at Leeds Beckett University
- Software and Systems (20 credits)
- Negotiated Skills Development (20 credits)

Part Time Delivery

Part time students will be supported by the course team to determine an appropriate selection of modules for each year of study.

Assessment Balance and Scheduled Learning and Teaching Activities

The assessment balance and overall workload associated with this course are calculated from core modules and typical option module choices undertaken by students on the course. They have been reviewed and confirmed as representative by the Course Director but applicants should note that the specific option choices students make may influence both assessment and workload balance.

A standard module equates to 200 notional learning hours, which may be comprised of teaching, learning and assessment, any embedded placement activities and independent study. Modules may have more than one component of assessment.

Assessment

On this course students will be assessed predominantly by coursework and practical assessments. There are some examinations, presentations, and phase tests. The 60 credit point Dissertation module will require students to develop a product (or based on an empirical study). This has to be a technical project and must suit the nature of Advanced Computer Science. Students are required to produce a thesis as a part of the dissertation assessment.

Workload

Overall Workload	
Teaching, Learning and Assessment	144 hours
Independent Study	Standard 20 credit modules = 1056 hours Dissertation = 600 hours
Placement	N/A

Learning Support

If you have a question or a problem relating to your course, your Course Administrator is there to help you. Course Administrators work closely with academic staff and can make referrals to teaching staff or to specialist professional services as appropriate. They can give you a confirmation of attendance letter, and a transcript. You may also like to contact your Course Rep or the Students' Union Advice team for additional support with course-related questions.

Student Services

If you have any questions about life at University, call into our Student Services Centre at either campus or contact Student Advice directly. This team, consisting of trained officers and advisers are available to support you throughout your time here. They will make sure you have access to and are aware of the support, specialist services, and opportunities our University provides. They also work on a wide range of projects throughout the year all designed to enhance your student experience and ensure you make the most of your time with us. Student Advice are located in the Student Services Centre in the Leslie Silver Building at City Campus and on the ground floor of the Priestley Building at Headingley Campus. The team can also be contacted via email at studentadvice@leedsbeckett.ac.uk, telephone on 0113 812 3000, or by accessing our online chat link, available on the student homepage.

Support and opportunities

Within MyBeckett you will see two tabs (Support and Opportunities) where you can find online information and resources for yourselves. The Support tab gives you access to details of services available to give you academic and personal support. These include Library Services, the Students' Union, Money advice, Disability advice and support, Wellbeing, International Student Services and Accommodation. There is also an A-Z of Support Services, and access to online appointments/registration.

The Opportunities tab is the place to explore the options you have for jobs, work placements, volunteering, and a wide range of other opportunities. For example, you can find out here how to get help with your CV,

prepare for an interview, get a part-time job or voluntary role, take part in an international project, or join societies closer to home.