Introduction

As the technology for integrating computer and communication systems matures, there will be greater emphasis on developing appropriate services and applications. This MSc seeks to strike a balance between advanced study of heterogeneous network infrastructure and computing systems, and the study of the development of applications for new devices and technologies (mobile, ubiquitous, wearable). The success of the next generation of mobile systems will depend largely on the ability of the industry and academia to develop and provide appropriate applications to the users of the new mobile and wireless world.

The main goal of this unique programme is to prepare professionally trained graduates for the industry. They will be able to develop efficient and exciting applications for the new generations of mobile systems and networks. The programme comprises both the basics of mobile technologies and advances in mobile applications.

This programme is one of the first few of its kind worldwide. In particular, the MSc in Mobile Applications programme will draw graduates wishing to bridge the disciplines of computing and content management and creation, with special emphasis on mobile applications. This programme draws upon the successful research expertise of the School of Electrical Engineering and Computer Science (SEECS) within the Faculty of School of Engineering and Informatics (SEI).

Programme Aims

The MSc in Mobile Applications, in particular, seeks to:

- Respond to current academic challenges provided by mobile and embedded devices and meet commercial needs for employees who are able to understand and think strategically about future developments in this area.
• Provide a high academic quality-of-service to students, covering both theoretical and practical aspects of computing and mobile applications.

• Enable students to equip themselves with knowledge, skills and understanding, at an advanced level within the chosen field of study.

Programme Learning Outcomes

On completion of this award you will be able to:

At PG Certificate and PG Diploma Level:

LO1. Demonstrate an advanced understanding of some of the theories, principles and techniques applicable in the field of mobile applications and technology; including information engineering and software use, core computing, networking and application development;

LO2. Explain and relate concepts and be able to apply appropriate practical techniques in the area of mobile applications;

LO3. Critically analyse and evaluate mobile software and technology and apply it to specific situations;

LO4. Select, adapt and apply project management skills to mobile applications projects;

LO5. Demonstrate an advanced understanding of, and ability to apply, concepts, principles and theories underpinning web technology and web production to differing situations;

LO6. Critically examine and appreciate the central issues in the main sub-areas of AI and be able to apply AI techniques to gaming;

LO7. Select adapt and apply technical formal methods of delivering media content and applications to mobile devices;

LO8. Explain and relate concepts and be able to apply appropriate practical techniques in the area of human-computer interaction.

At the MSc Level, all the above and including:

LO9. Select, design, plan and manage a self-directed and managed research-informed project;

LO10. Demonstrate a critical awareness of current and possible future opportunities and problems in mobile applications; evaluating current developments and trends.

On successful completion of the MSc in Mobile Applications you will be able to achieve mastery of applications targeted at existing and yet to emerge devices by demonstrating:

Systematic Knowledge and Understanding and a critical awareness at advanced level, of core computing, networking and application development subjects including device technologies, software systems & development; detailed understanding of the differences between traditional applications and mobile applications through recognition of the influence of mobility on system design and evaluation, and application development particularly the human computer interface and display technologies; a comprehensive understanding of techniques applicable to research in mobile computing and applications;
Discipline Specific Skills, showing: originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry in Mobile Computing and Digital Media are used to create and interpret knowledge in the discipline; the ability to design, implement, and evaluate mobile applications;

Personal and Transferable Skills necessary for employment requiring: the exercise of initiative and personal responsibility; decision-making in complex and unpredictable situations; and the independent learning ability required for continuing professional development.

The Curriculum

The MSc in Mobile Applications covers a range of specialist topics, leading to the qualification of a Master's degree. The programme has two stages: the taught programmes stage, organised on a modular basis, which takes place over two semesters during one academic year (or four semesters during two academic years for the part-time route), with the project/dissertation module/stage undertaken over the summer period. Part-time students are required to agree their timetables with their Programme Leader at the beginning of every semester.

The programme is structured in terms of Core and Option modules. The relevance of the programme’s content to the stated aims and learning outcomes, is based on existing core computer science and informatics topics as well as possible new modules on the design and implementation of mobile applications. Students are encouraged to attend research seminars based on the latest research work in the field, and in particular, recent research carried out by the University’s Networks and Performance Engineering Research Group.

Programme Structure

<table>
<thead>
<tr>
<th>Code</th>
<th>Module title</th>
<th>level</th>
<th>sem</th>
<th>Credit</th>
<th>Type</th>
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<tbody>
<tr>
<td>CM1067D</td>
<td>Mobile Applications</td>
<td>7</td>
<td>1</td>
<td>20</td>
<td>C</td>
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<tr>
<td>CM1066D</td>
<td>Networks and Protocols</td>
<td>7</td>
<td>1</td>
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<td>CM1052D</td>
<td>Security, Privacy and Data Protection</td>
<td>7</td>
<td>1</td>
<td>20</td>
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<td>CM1032D</td>
<td>Information Engineering</td>
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<td>1</td>
<td>20</td>
<td>O</td>
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<tr>
<td>EM4006D</td>
<td>Software Systems for e-Business and WWW</td>
<td>7</td>
<td>2</td>
<td>20</td>
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<td>CM1034D</td>
<td>Human Computer Interaction (Design and Development)</td>
<td>7</td>
<td>2</td>
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<td>CM0328D</td>
<td>Artificial Intelligence for Games</td>
<td>6</td>
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<td>CM1044D</td>
<td>AI with Applications</td>
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<td>CM0422D</td>
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<td>2</td>
<td>20</td>
<td>O</td>
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<tr>
<td>CM0424Z</td>
<td>Project/Dissertation</td>
<td>7</td>
<td>DISS</td>
<td>60</td>
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</tr>
</tbody>
</table>

C = Core        O = Option

The curriculum may change, subject to the University's programme approval, monitoring and review procedures.

Assessment Regulations

This Programme conforms to the standard University Assessment Regulations for Postgraduate Programmes which are available at the following link:

http://www.bradford.ac.uk/aqpo/ordinances-and-regulations/
Teaching and Assessment Strategies

A range of teaching and learning methods are employed including lectures, tutorials, laboratory work and directed private study. Project work further enriches the opportunities you have to take control of your own learning.

For every 20 credits on the programme, you will be required to commit 200 hours of study. Some of these hours will be formally timetabled - lectures, laboratories, seminars, tutorials and workshops – and others will involve you in carrying out private study. Professional and personal transferable skills enhancement is provided through the optional seminar programme and user groups.

The School is committed to Education for Sustainable Development (ESD) and endeavours to integrate ESD wherever possible into the curriculum.

Admission Requirements

The University welcomes applications from all potential students regardless of their previous academic experience; offers are made following detailed consideration of each individual application. Most important in the decision to offer a place is our assessment of a candidate’s potential to benefit from their studies and of their ability to succeed on this particular programme. Entrance requirements for each programme will vary but consideration of your application will be based on a combination of your formal academic qualifications and other relevant experience.

If you have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate this learning in order to provide you with exemptions from specified modules contained within the curriculum. Please talk to us if you do not fit the standard pattern of entry qualifications.

We are continually reviewing and developing our practices and policies to make the University more inclusive, but if you are disabled we may need to make some adjustments to make sure that you are not disadvantaged. We would advise you to contact the Programme Leader before you apply to discuss these.

We specifically require that all applicants:

- have a good Honours degree (normally 2:2 or above) awarded by an approved degree-awarding body in Computer Science, or Mathematics or Engineering, following a programme which contained a significant proportion of computing; or
- have a good Honours Degree (normally 2:2 or above) in a subject other than with above, but can demonstrate sufficient relevant professional computing experience.

Candidates applying to the programme with non-standard qualifications will be judged on an individual basis using the University’s RPL procedures.
Learning Resources

The JB Priestley Library on the city campus and our specialist library in the School of Management provide a wide range of printed and electronic resources to support your studies. We offer quiet study space if you want to work on your own, and group study areas for the times when you need to discuss work with fellow students. Subject librarians for each School provide training sessions and individual guidance in finding the information you need for your assignment, and will help you organise your references properly.

Student PC clusters can be found in both our libraries and elsewhere on the campus. Many of these are open 24/7. You can also use the University's wireless network to access the internet from your own laptop. Most of our journals are available online (both on and off campus), and you can also access your University email account, personal information and programme-related materials this way.

Staff are on hand during the daytime to help you if you get stuck, and there is a 24/7 IT helpline available.

Student support and guidance

All students admitted to the School of Electrical Engineering and Computer Science go through a process of induction that includes detailed talks by the Dean and Head of School. Afterwards, ongoing support for students is provided in the form of one-stop facilities located at the School Student Support Office (SSO) in Horton Building, open throughout the day during term, and in the mornings and afternoons outside term. Support for registered students is also provided 24/7 via the intranets of the School and the School’s Technical Support. The School also uses the University’s Virtual Learning Environment (VLE) to support students via their individual modules.

Programme Team

Support for you personally and in your programme of study, will be provided both by the University and the Programme Team. You will be allocated a personal tutor who is someone with whom you will be able to talk about any academic or personal concerns. The School will ensure that there is someone available with whom you feel comfortable to help and support you. You will be provided with a comprehensive series of handbooks that you can consult on a range of learning issues and your programme tutors will be available to consult on subject specific queries.

All students on our MSc in Mobile Applications will be allocated a Personal Tutor who provides support and guidance on matters relating to learning, teaching, and academic progress. There are tutors in the School who have specialist responsibilities, and are able to deal with specific issues relating to factors such as disability, equal opportunities and gender.

Students’ Union

We value the feedback provided by students and collaborate with the Students’ Union, through a system of student representatives and formal Staff Student Liaison Committees, so that any issues you wish to raise are addressed rapidly.
The Students Union provide professional academic representation and advice. The Students’ Union and the University of Bradford work in partnership to provide confidential counselling and welfare services where you can get help with any aspect of your personal or academic life. Student Financial and Information Services (part of the Hub) will provide you with information about a diverse range of issues such as council tax, personal safety and tourist information. International Students can access a range of additional advice and support services through the Student’s Union.

**The Hub, Student Support Centre**

The Hub, Student Support Centre provides a central reception where students can receive information, advice and guidance on a whole range of topics about their life at University. The Hub is located in the Richmond Building adjacent to the Atrium.

The teams located within The Hub:

- Accommodation
- Admissions
  - Education Liaison
  - Enquiries
- Student Administration and Support
  - Bursaries and Financial Support
  - Finance and Credit Control Group
  - Payzone
  - Records and Tuition Fees
- International Office
- Customer Service Team

[www.brad.ac.uk/hub](http://www.brad.ac.uk/hub)
+44 1274 232233

**Employability and Career Development**

The University is committed to helping students develop and enhance their employability profile, commitment towards a career pathway(s) and to implementing a career plan.

Professional career guidance and development support is available throughout your time as a student and as a graduate from Career Development Services. The support available from Career Development Services includes a wide range of information resources, one to one appointments, a weekly workshop programme, a mentoring programme, graduate recruitment and careers fairs, plus information and help to you find part time work, summer work placements, internship programmes and graduate/postgraduate entry vacancies. In addition, some students will receive seminars and workshops delivered by Career Development Services as part of their programme of study. All students are encouraged to access Career Development Services at an early stage during their studies and to use the extensive resources available on their web site [www.careers.brad.ac.uk](http://www.careers.brad.ac.uk).

Career Development Services annually undertakes a survey of all postgraduates to find out their destination six months after graduation. The survey gathers data on the employment and further study routes graduates have entered and a range of other information including job roles, name and location of employers, salary details etc.
The survey findings for each programme of study are presented on the programme information pages on the University website and via Career Development Services’ website www.careers.brad.ac.uk

**Learner Development Unit for Academic Skills Advice**

For postgraduate students on taught programmes who are looking to improve their marks during their time at university, study skills and maths advice is available to all regardless of degree discipline. Students can access a programme of interactive workshops and clinics which is delivered throughout the year. This is in addition to our extremely popular face-to-face guidance from our advisers, who also offer a wide range of online and paper based materials for self-study.

http://www.bradford.ac.uk/academic-skills/

**Disability**

Disabled students will find a supportive environment at Bradford where we are committed to ensuring that all aspects of student life are accessible to everyone. The Disability Service can help by providing support, advice and equipment to help you get the most out of your time at Bradford. It is a place where you can discuss any concerns you may have about adjustments that you may need, whether these relate to study, personal care or other issues.

For more information contact the Disability Service by phoning: 01274 233739 or via email: disabilities@bradford.ac.uk

**University policies and initiatives**

**Ecoveristy**

Ecoveristy is a strategic project of the University which aims to embed the principles of sustainable development into our decision-making, learning and teaching, research activities campus operations and lives of our staff and students. We do not claim to be a beacon for sustainable development but we aspire to become a leading University in this area. The facilities we create for teaching and learning, including teaching spaces, laboratories, IT labs and social spaces, will increasingly reflect our commitments to sustainable development. Staff and student participation in this initiative is crucial to its success and its inclusion in the programme specification is a clear signal that it is at the forefront of our thinking in programme development, delivery, monitoring and review.

For more details see www.bradford.ac.uk/ecoversity/

**Further Information:**

For further information, please check the University prospectus or contact Admissions.

The Admissions Office
The University of Bradford
Richmond Road
Bradford, BD7 1DP
UK

The Recruitment and Marketing Office
Faculty of Engineering and Informatics
The University of Bradford
Horton Building, Richmond Road
Bradford, BD7 1DP, UK

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Disclaimer

The details of this Programme Specification and information contained therein are subject to change in accordance with the University of Bradford’s programme approval, monitoring and review procedures.