We provide an exciting educational experience, one where you will be happy, and one from which you will prosper in your future career.

You can choose programmes that build on your strengths, whether they lie in creativity and innovation, applying business and financial sense, understanding the latest technologies or learning about scientific foundations.

Whatever interests you have, we will help you to become an individual with drive, an innovator, and someone who can think computationally and be adaptable.

We work together with top researchers across the world to push the boundaries of knowledge in Computing and Computer Science, so the modules you study are modern, cover state-of-the-art topics and are taught by experts.

We will help you develop an inquiring and problem-solving mind that will make you an invaluable asset to your employer.

We provide an academic educational experience where you will also learn practical skills.

We also provide excellent personal support along with comprehensive careers guidance.
The Department of Computer Science

We are a young and dynamic department that takes a scientific and rigorous approach to Computing and Computer Science. We recognise this is a vibrant and diverse discipline, ranging from the management and architecture of global IT projects, through to the scientific development of innovative theories and technologies. This modern and forward-thinking philosophy is reflected in our wide range of high quality degree programmes; the department sets excellent academic standards, but our degrees will also teach you the practical skills and knowledge that are sought after by employers.

The Department offers a wide variety of programmes but you are always treated as an individual. Our staff are friendly and approachable, passionate about Computing, and dedicated to both teaching and research. There are many PhD students, graduate teaching assistants and postdoctoral researchers working on several national and international projects. Combined with international visitors from industry and academia, this helps to create a dynamic and exciting environment from which you will profit as an undergraduate.

The Department of Computer Science welcomes international students: our stimulating environment attracts students and academics from many countries worldwide, including continental Europe, the Indian sub-continent, China, Singapore, Malaysia and the Middle East. We accept most international qualifications for entry to our programmes.

“The Department is a lively and friendly place, one in which you can thrive and be happy. We look forward to welcoming you to Leicester, and if you need more information after reading this brochure please do not hesitate to contact us.”

Roy Crole
Admissions Coordinator
Teaching

Excellence through Research

Our teaching is inspired by our research and we aim to help you to become a highly skilled professional well versed in advanced methods and technologies. Our teaching is focussed on helping you to develop an inquiring and problem-solving ethos, to be innovative, and to think in a computational way. Our degree programmes are of high quality, and students leave us with a mixture of state-of-the-art practical skills, essential in the modern workplace, together with knowledge of fundamental principles of Computing and Computer Science, essential for adapting to tomorrow’s employers. You will be sought after by world-class companies, and also be very adaptable to future advances and changes in technology and science.

Our excellence in research has many benefits for you. As active researchers, at the cutting-edge of the subject, we can bring a real depth of understanding of the subject to our teaching. This is especially critical in a discipline that is as rapidly evolving as Computing and Computer Science. Our research training teaches us to question the status quo, and hones our problem-solving skills. We bring this ethos to our teaching as well. Research projects often enable us to fund postdoctoral researchers and PhD
students, who can provide additional teaching and support, and most importantly bring different perspectives to learning. Our Industrial Advisory Board, which contains major employers such as ATX Software, Bloomberg, IBM, LogicaCMG, Microsoft, Motorola and Vodafone, is built largely upon connections that we have made through our research. Their input ensures that our degrees prepare you for the worlds of business, finance, industry and many other areas of employment. Our website contains more details of our research at www.cs.le.ac.uk

**External Recognition**

The degrees are designed to satisfy the accreditation criteria of the British Computer Society (BCS). The BCS has commended the Department and students for producing excellent project work, and for the level of support given to students.

The government’s Quality Assurance Agency (QAA) report noted about the Department that “they had total confidence in the academic standards and quality of learning opportunities”, and “final-year projects are impressive”. They also commended the friendly relationship between staff and students and noted that students’ views are taken fully into account.
Overview

Our Computing degrees place emphasis on practical knowledge, and understanding of business and management skills, while adopting an academic and rigorous approach that will support you throughout your career. They are designed to meet the requirements of BCS CITP and Chartered Engineer (CEng) accreditation.

We focus on the methods and techniques through which software can be developed following rigorous engineering practices, meeting required levels of quality. In addition you learn how to plan and manage architectures for exciting large-scale development projects, coupled with business and financial Computing. There is an introduction to mathematics for Computing, as well as state-of-the-art technologies including Java, XML, and PHP, and modern programming development environments such as Eclipse. There is extensive coverage of software engineering, including modelling techniques (UML) and project management. Hardware and networking modules provide you with key knowledge of modern Computing systems, from personal computers to world-distributed computation. Topics that build upon these subjects can include multimedia and computer graphics (Java 3D), web technologies, internet security, distributed systems and applications, and software quality. Some of our students also choose to learn C++ and .NET.

Aims and Objectives

- We will help you acquire an education and training in Computing that includes both fundamental concepts and state-of-the-art trends, and also provides you with a good indication of the breadth of the subject.
- We provide opportunities for you to learn a wide range of skills in the analysis, design, specification, implementation, testing and documentation of computer software systems.
- You can develop your critical analysis, skills in problem solving, written communication, and abilities in presentation.

Our Programmes

<table>
<thead>
<tr>
<th>BS</th>
<th>Computing</th>
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<tbody>
<tr>
<td>BS Computing</td>
<td>G405 3 years, full-time</td>
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<tr>
<td>BS Computing (Europe)</td>
<td>G406 4 years, full-time</td>
</tr>
<tr>
<td>BS Computing (Industry)</td>
<td>G407 4 years, full-time</td>
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</tbody>
</table>
You can acquire experience of both team-based and individual project work.

You can develop skills that will enhance your employment prospects, especially in the IT industry or other numerate disciplines.

You can become familiar with a core of current programming languages.

You can have an appreciation of the business and financial aspects of computing.

You can gain expertise and understanding at a level enabling you to embark upon a taught Masters programme in computing.

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**LEVEL ONE SUBJECTS**

- Programming, program design, and program development environments.
- Databases and web applications.
- Study skills, organisation, planning, and professional practice.
- Discrete structures and computing foundations.
- Web page design and internet technologies.
- Supplementary subjects such as management or foreign languages.

**LEVEL TWO SUBJECTS**

- Project management and professionalism
- Software engineering group project.
- Requirements engineering, specification and design.
- Human computer interaction.
- Networks, operating systems and distributed systems.
- Multimedia and computer graphics.
- Business and financial computing.

**LEVEL THREE SUBJECTS**

- Third year individual project (your own ideas or choose from over 50 topics).

Below are typical options that you may choose from:

- Computer security and cryptography.
- Distributed systems.
- Web technologies.
- Software systems modelling.
- Software measurement and quality assurance.
- Multimedia data compression methods.

“ATX Ltd, BAE Systems, BCS, and Microsoft all generously sponsor prizes for our very best students.”

Professor José Fiadeiro
Head of Department

“One of the most striking things about the course was how incredibly friendly and approachable the staff in the Department are ...”

Anjali Thalayasingham
Overview

You have the opportunity to take the majority of the modules included on the Computing degrees, but there are additional exciting benefits. Computer Science will place you in a very good position by not only enabling you to learn about applied Computing and technology which will equip you for many careers, but it will also ensure you can gain employment with the very best companies, including those involved with the research and development of future technologies. Computer Science does so by also enabling you to study the scientific and theoretical foundations of the subject. This degree is not only designed to meet the requirements of BCS CITP and CEng but also Chartered Scientist (CSci).

In addition to the subjects covered in Computing, you will also learn about logic and scientific problem solving which will ensure you can tackle the challenges of the workplace in a truly organised
You will also be able to understand the fascinating work undertaken by companies such as Intel who use logic to verify the correctness of processors. You can learn alternative programming paradigms such as functional programming (Haskell): these languages are also used in the development of exciting new embedded systems. You will be able to choose from a wider range of third year optional modules that typically include algorithms and security, cryptography, compression methods for multimedia, advanced web technologies, and concurrent processes.

**MComp Computer Science**

You may also study Computer Science over four years, leading to the award of the MComp degree. The first three years of study are the same as those of the BSc in Computer Science. In the final year you take modules at the masters level, which currently cover themes in advanced software engineering, advanced algorithms, financial Computing, and distributed systems. Further project work ensures that you can work in an organised and disciplined way that will lead naturally to either further advanced study or to high quality employment.

**Aims and Objectives**

In addition to the core aims of the Computing degree, you will gain:

- Familiarity with a variety of modern programming languages, and the underlying principles of programming paradigms (functional, object oriented, logical and so on).
- An ability to solve scientific problems, along with an appreciation for mathematical and scientific methods, which will provide a lifelong support for your career.
- Appreciation of the necessity for rigorous subject foundations, and the need for logical arguments, which will also contribute to your lifelong skills.
- Having expertise and understanding at a level where you could embark upon a high quality Masters programme in Computer Science, or in the case of the MComp, a research degree at Ph.D. level.

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**LEVEL ONE SUBJECTS**

- Programming, program design, and program development environments.
- Databases and web applications.
- Logic and problem solving; artificial intelligence.
- Study skills, organisation, planning, and professional practice.
- Discrete structures and computing foundations.
- Computer architecture and processors.

**LEVEL TWO SUBJECTS**

- Project management and professionalism.
- Software engineering group project.
- Requirements engineering, specification and design.
- Human computer interaction.
- Networks, operating systems and distributed systems.
- Multimedia and computer graphics.
- Automata and models of computation.
- Functional programming.

**LEVEL THREE SUBJECTS**

**Third year individual project** *(your own ideas or choose from over 70 topics)*.

**Below are typical options that you may choose from**:

- Computer security, and cryptography.
- Distributed systems.
- Web technologies.
- Software systems modelling.
- Software measurement and quality assurance.
- Multimedia data compression methods.
- Communication and concurrency.
- Algorithm design.
- Advanced functional programming.
Overview

These degrees combine a firm grounding in Computing with significant and in-depth knowledge of management tools and techniques. As noted by prospects.ac.uk (the UK’s official graduate careers website) in a recent editorial: “The key to success in the IT-market lies in choosing a course with content relevant to industry and which nurtures in the undergraduate a business acumen to supplement technical knowledge.” The degrees are offered in conjunction with the School of Management at the University of Leicester. The School of Management is rapidly emerging as one of the country’s top management schools.

Aims and Objectives

- You will acquire an education and training in Computing that includes both fundamental concepts and state-
of-the-art trends, and also provides you with a good indication of the breadth of the subject;

- You will learn a wide range of skills pertaining to the analysis, design, specification, implementation, testing and documentation of computer software systems.

- Your intellectual development will be stimulated and you will develop powers of critical analysis, skills in problem solving, written communication, and presentation.

- You will acquire experience of both team-based and individual project work.

- You will develop skills that will enhance your employment prospects, especially in the IT industry or other numerate disciplines.

- The course will expose you to the realities of managerial experience.

- You can develop skills that will allow you to interact with and fulfil roles of a more managerial nature within organisations.

- We will teach you about businesses, communication, change and development.

- You will have expertise and understanding to a point where you could embark upon postgraduate study in business studies, management and computing.

“ I’ve gained a huge range of skills, from basic management techniques to complex technical areas. As an overseas student [I am from Sri Lanka] I have had a really good time in Leicester.”

Anjali Thalayasingam

## LEVEL ONE SUBJECTS

<table>
<thead>
<tr>
<th>Subject</th>
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<tbody>
<tr>
<td>Programming, program design, and program development environments.</td>
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<tr>
<td>Databases and web applications.</td>
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<tr>
<td>Study skills, organisation, planning, and professional practice.</td>
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<tr>
<td>Discrete structures and computing foundations.</td>
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<tr>
<td>Introductions to management and marketing.</td>
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## LEVEL TWO SUBJECTS

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<thead>
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<tr>
<td>Human computer interaction.</td>
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<tr>
<td>Networks, operating systems and distributed systems.</td>
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<tr>
<td>Multimedia and computer graphics OR Business and financial computing.</td>
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<tr>
<td>Marketing communications, managing organisations and resources and understanding changes and developments.</td>
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</tbody>
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## LEVEL THREE SUBJECTS

<table>
<thead>
<tr>
<th>Subject</th>
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<td>Third year individual project (your own ideas or choose from over 50 topics).</td>
</tr>
<tr>
<td>Below are typical options that you may choose from:</td>
</tr>
<tr>
<td>Computer security, coding and cryptography.</td>
</tr>
<tr>
<td>Distributed systems.</td>
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<tr>
<td>Web technologies.</td>
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<tr>
<td>Software measurement and quality assurance.</td>
</tr>
<tr>
<td>Global marketing and business ethics.</td>
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<tr>
<td>International business with corporate strategy.</td>
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These courses follow the same structure and modules as the main subject degree for the first two years.

If you take the Europe option you will then spend your third year studying at a partner university in Europe. Our partner universities are currently Université Henri Poincaré (Nancy, France), Universidad Politécnica de Valencia (Spain) and Università degli Studi di Roma “La Sapienza” (Italy). You will receive a grant under the Erasmus Scheme and free language training before taking your year in Europe. You will then return to the University for your final year which follows the same structure and modules as the main subject degree.

If you take the Industry option you will then spend your third year working in an industrial/commercial environment. The Department and the University offers advice and assistance to students and you can get considerable guidance from the Department’s Industrial Advisory Board. The placement enables you to enhance your profile with the knowledge and experience that comes from working for a year within a computing company before returning to the University for your final year which follows the same structure and modules as the main subject degree.

“The Department’s Industrial Advisory Board (IAB) ensures our curricula match the requirements of modern industry; and we in turn offer a research potential of international standing. You will benefit from our IAB collaboration through industrial projects, placements and career opportunities.”

Reiko Heckel
Industrial Liaison
Changing Degree

- If you enter on the Computer Science degree (green pathway) you may change to the Computing degree (blue pathway) after Semester 1, 2 or 3; from semester 4 onwards you must remain on Computer Science. If you change to Computing after semester 1, you can take either a Computing or a Computer Science module in semester 2, but you must take a Computer Science module in semester 3 (grey arrows). If you change to Computing after semester 2, you must also take a Computer Science module in semester 3.

- If you enter on the Computing degree and choose to take Computer Science modules as options, you can change to Computer Science after semesters 1, 2 and 3; from semester 4 onwards you must remain on Computing.

- If you enter on the Computing with Management degree, you can change to the Computing degree after Semester 1 or 2; from semester 3 onwards you must remain on the Computing with Management degree.

- These rules also apply to changing from a Europe or Industry variant of a degree to the same variant of another degree.

Department Activities

The iCS Newsletter.

We produce iCS, a short newsletter for students and teachers, with the aim of encouraging young people to enter the fascinating world of Computing and continue within the profession. The idea is to introduce readers to the real subject of Computer Science and widen their knowledge of it.

At Leicester we are inspired by Computer Science, and find it fun, interesting and also challenging. We hope that readers of iCS will feel the same way, and the newsletter aims to show you just how exciting and thought provoking Computer Science can be.

www.cs.le.ac.uk/admissions/BSc/iCS/ics@mcs.le.ac.uk
The 100,000th graduate

Katerina Argyrou graduated in summer 2009 with a first class degree in Computer Science, and was the University’s 100,000th graduate. Of her experience at Leicester she said:

“The academic experience I had here at the University of Leicester was great. My personal tutor was always there to support me, giving me advice and guiding me. The Department was organised and the lecturers very helpful and approachable – always there when we needed them.”

Katerina Argyrou, BSc in Computer Science

The University of Leicester Computing Society

This is a student society – run by students for students. The society’s aim is to provide some added value to the academic degree programmes. Amongst our offerings are educational talks and social outings, and we organise a range of events which attract students interested in Computing from across the entire University, as well as from the Department. We endeavour to provide enjoyable events some of which provide a framework for students to learn from and help each other. The Committee is democratically elected each year, and all society members are eligible to run for election. Please join the society and get involved!
Student Profile

Luana Fagarasan
BSc Computer Science,
1st year

Why did you apply to Leicester?
Being from Romania, I chose to apply to Leicester because of its very good reputation. But what made me choose Leicester as my firm choice was the feeling that the admissions team managed to give me: I belong here.

How do you find the Department?
What I think makes the Department of Computer Science stand out are the warm, approachable and professional staff. The lectures, laboratories, help sessions, meetings with your personal tutor, the Student-Staff committee: these are all designed to help you gather as much knowledge and as many skills as you can. I find the course to be challenging and well designed, preparing you to work in the real world.

Why did you choose Computer Science?
I decided to study Computer Science because it came naturally to me, being very interested in mathematics and programming. Now, after one year, I can honestly say that I have enjoyed all the modules that I have studied. And this is because, despite being difficult at times, somebody was there to explain and guide us. And believe me, when you understand a concept or a module deeply, you can’t help saying that you enjoyed it!

How did you find your first year?
The Department of Computer Science made my first year at university a great experience that I wouldn’t even consider changing. I was surrounded by people who care, that help you get through difficulties and try to offer you as much of their knowledge as possible, in order to help you progress, understand the real world, discover and feel confident about yourself. So, my advice is to come to University of Leicester and enjoy every second of your higher education experience, because it is amazing.
Your Learning Experience

Facilities
The Department has 24-hour access general-purpose laboratories, containing fully networked Windows/Linux dual-boot PCs and Macintosh computers, and wireless access for laptops. Departmental technical support officers maintain the laboratories. A networking laboratory makes available specialised wired and wireless equipment. We also have dedicated MSc laboratories, which are used by undergraduate students for parts of their project work. We have a laboratory dedicated to level two and level three students.

Teaching Methods and Support
Our approach to teaching includes lectures and laboratory classes together with small group tutorials. Lectures include innovative software demonstrations as well as more traditional presentations.

We have a team of graduate teaching assistants. These are PhD students who also organise computer laboratories and assist staff in their teaching duties. The teaching perspectives of our graduate teaching assistants can be of enormous benefit to our students, having only recently completed their own batchelors and masters degrees. Teaching assistants
also run regular help sessions that provide additional student support. We also employ full time teaching fellows. Each fellow normally holds a PhD and provides valuable high-level teaching support for our undergraduates.

Our academic staff are friendly but professional, and are always happy to help you with queries regarding the course material outside of classroom hours.

All students have their own personal tutor who advises them about welfare, academic progress and careers development. You can see your personal tutor at any time by appointment or office hour – they are here to help you!

Projects
Companies tell us that project work is vital as a preparation for employment, and it is a prominent part of the degrees. In the second year project, you will be part of a team of students working together to develop software that has been commissioned by a real client. These projects have been praised by the BCS and allow you to gain a real insight into realistic design and implementation techniques and professional project management.

The third year individual project is a chance to follow your own particular interest in much greater depth, with one-to-one supervision. Popular recent projects have included 3-D games, internet telephony, programming robots, and sophisticated e-commerce sites for managing stock portfolios or auctioning cars. Students’ own ideas have included software for garden landscaping and a guitar tablature editor. Some students code complex software such as a theorem prover and investigate how these tools are used within international companies such as Intel.

Assessment
State-of-the-art web-based materials, automated feedback and marking systems, on-line tests and electronic coursework submission all provide an excellent modern learning environment. Coursework contributes to your marks, especially in practical modules. Apart from project work, which is assessed by coursework only, all modules are assessed partly by coursework and partly by examination. Usually the contribution of coursework increases in modules that are more practical in nature, and can constitute up to 50% of your final module mark.

“...My second year project which involved working in a team was an excellent experience. It certainly has given me a good grounding in terms of working in a team.”

Victoria Hinds
Some of our graduates go on to study MScs in Computer Science, management or management and IT, at Leicester or elsewhere. The Department offers one-year advanced taught MSc courses in Agile Software Engineering Techniques, Computer Science, Computational Methods, Distributed Systems, Software Engineering, Software Engineering for Financial Services, and Web Applications and Services. We have MPhil/PhD students doing research in diverse areas such as adaptive socio-technical systems, algebraic methods and design techniques, concurrent and distributed systems, evolutionary computing, formal languages, model-driven software development, optimisation problems in communication networks, service-oriented computing, system re-engineering, or visual languages.

Our Computing graduates experience a breadth of lucrative and rewarding careers, working in large companies, such as Accenture, BAE systems, Bloomberg and LogicaCMG, through to small start-ups. Many apply their knowledge directly as software engineers or systems analysts; others apply their IT skills and problem-solving abilities in finance, marketing and general business. Those with Computer Science degrees are also especially well-suited to working in the research and development of new cutting-edge technologies.

Living at Leicester

About the University

Some universities consider their primary purpose to be high quality research, others concentrate on excellent teaching. Here at Leicester we think that the two are not only complementary, they’re inseparable. We believe that teaching is more inspirational when delivered by passionate scholars engaged in world-changing research – and that research is stronger when delivered in an academic community that includes students.

We think that a university should be about empowering people to explore what they don’t know. We achieve this through passionate, dedicated research and teaching. When we were named University of the Year for 2008-9 by the Times Higher Education, the judges applauded Leicester’s very different approach, calling us “elite without being elitist.” Of Britain’s top 15 universities only one – Leicester – exceeds its government benchmarks for inclusivity. Our dedication to providing an excellent student experience can be seen in our consistent performance in the National Student Survey. In 2008 92% of our full-time students were satisfied with their course. This is a level of satisfaction exceeded only by Cambridge amongst mainstream universities teaching full-time students in England.

With these ideas at heart, Leicester is re-framing the values that govern academia and re-defining what a university needs to be in the 21st century; we are constantly finding new ways of being a leading university.

About the city of Leicester

Leicester is lively and diverse with all the activities and facilities you would expect from a major city. This is combined with a friendly and safe atmosphere.

Developments in the city have included the opening of the Curve Theatre with its unique ‘inside out’ design where the stage is visible from the street. Further developments in the city’s cultural
UNDERGRADUATE COURSES IN COMPUTING AND COMPUTER SCIENCE

Applications

Applications to the courses should be made via UCAS. Applicants are not normally interviewed. All applicants receiving an offer will be invited to visit the Department. These degrees are not available on a part-time basis.

Entry Requirements

(Typical Offers are given and are for guidance only)

**GCSE:** Mathematics Grade C or above is required for all degrees. Mathematics Grade B is preferred for G400/G401/G402/MComp. English Language Grade C or above is usually required for G4N1/G4NF/G4NG.

**A/AS levels:** Three A levels usually required. Two AS levels considered in place of one A level. General Studies accepted. Keys Skills may be considered. Typical offers are:

- BSc Computer Science ABB
- BSc Computing BBB
- BSc Computing with Management BBB
- MComp Computer Science ABB/AAB

Europe variants usually have similar offers; ABB is required for any of the Industry variants.

**Access to HE course:** Pass relevant Diploma with some credits at distinction.

**European Baccalaureate:** Pass with 68% overall.

**International Baccalaureate:** Pass Diploma with 30.

**BTEC Nationals:** Full Diploma with DDD.

**Other Qualifications:** Other national and international qualifications welcomed.

Additional Information

**Mature students welcomed:** Alternative qualifications and work experience considered.

**Second Year Entry:** Admission to Computer Science or Computing possible for those with advanced qualifications compatible with our degree structure. Second year entry to Computing with Management is not permitted.

*A profile of high quality results is preferred.
For further information please contact
The BSc Admissions Team
Department of Computer Science
University of Leicester
University Road · Leicester · LE1 7RH

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