

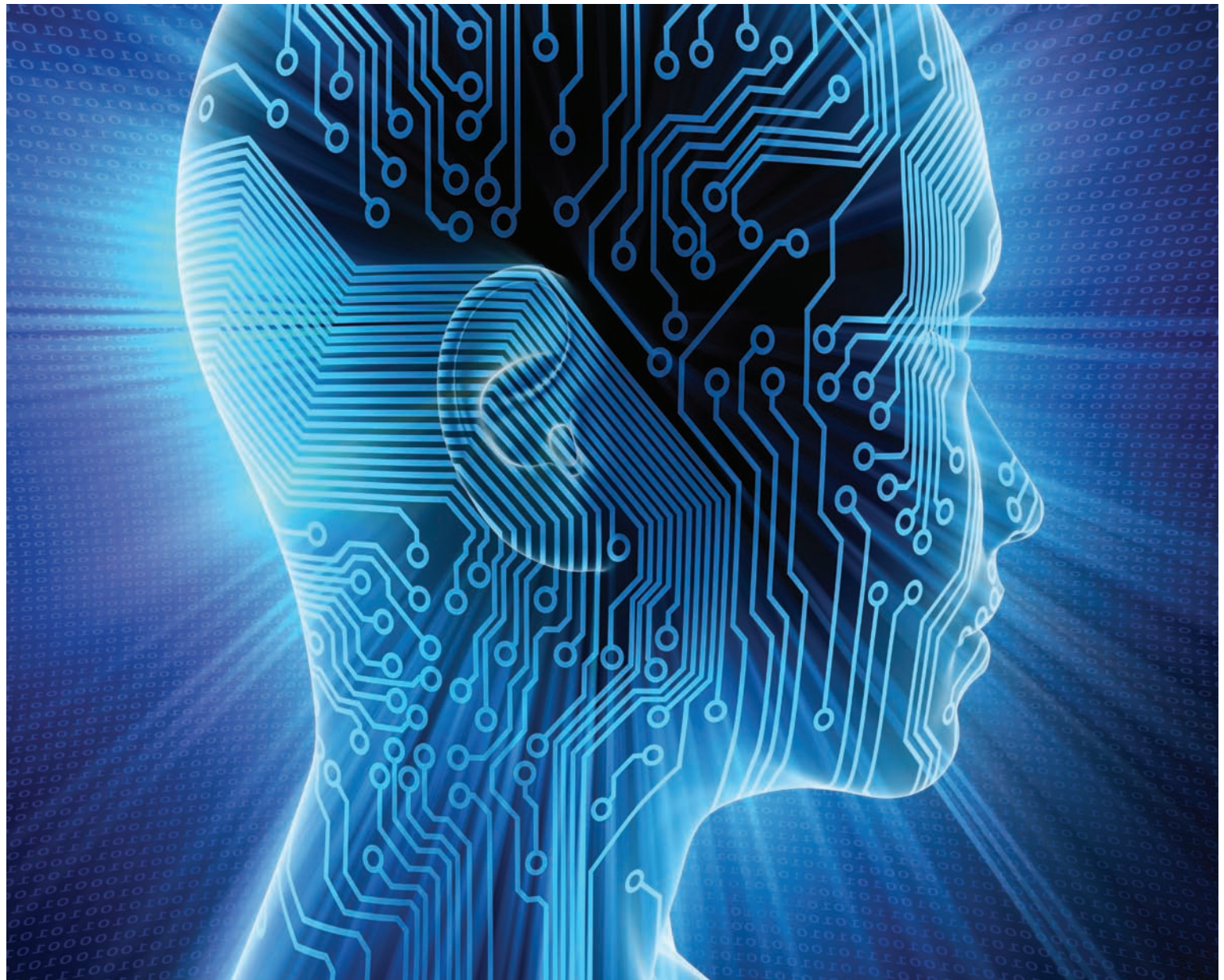
**School of Computing**

FACULTY OF ENGINEERING



**UNIVERSITY OF LEEDS**

# Undergraduate Degree Courses 2012



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# Computer Science and Information Technology at Leeds

Computer Science and Information Technology degree programmes at Leeds are very closely related to the Computer Science and Artificial Intelligence research undertaken at the University. Computer Science and Artificial Intelligence represent the cutting-edge in efforts to design and apply future generations of technologies.

**Theoretical Computer Science is concerned with the design and evaluation of algorithms; the sets of instructions implemented in computer programs. Artificial Intelligence is concerned with the design and implementation of computer-based systems that incorporate a range of ideas about human behaviour.**

Our degrees aim to capture the energy and excitement associated with cutting-edge research and, in the long term, we expect our graduates to occupy senior positions within the IT industry.

We offer the following (MEng, BSc) and (BSc) courses:

- **Artificial Intelligence (MEng, BSc)**
- **Computer Science (MEng, BSc)**
- **Computer Science with Mathematics (BSc)**
- **Information Technology (BSc)**

You can apply in the second year to add a year in industry or a year studying overseas (there are no separate UCAS codes for these options).

British Computer Society (BCS) accreditation will help you apply for Chartered Status after graduation. Our Computer Science degree course is accredited and accreditation is being sought for our Artificial Intelligence, and Information Technology degree courses.

#### **Impressive credentials**

With an international reputation for our teaching and research the School of Computing is one of the leading computing departments in the UK according to the latest Research Assessment Exercise (RAE). This is recognition that our staff are at the forefront of thinking in their field and ensures that our students benefit from a curriculum designed for the future. Our graduates have progressed to the very highest levels of the world's major IT firms.

Our continuous investment in staff and facilities has been recognised in the National Student Survey (NSS) results, and our supportive environment provides students with an outstanding learning experience.

#### **First-class facilities**

- Specialist facilities, including a variety of superbly equipped laboratories. For example, visualisation researchers have access to a 53-megapixel powerwall display and a dedicated 3D virtual reality suite. Research facilities are especially important to undergraduates undertaking internships and final year projects.
- Laboratories containing both Linux and Microsoft platforms.
- New Cloud Computing testbed
- You'll enjoy excellent teaching facilities and well-equipped lecture theatres and laboratories.
- Connectivity provided by the School's wired and wireless networks. A Virtual Private Network (VPN) facilitates the secure connection of a wide range of devices (laptops, home machines, Personal Digital Assistants (PDAs), etc).
- The School Information System allows you to access grades, attendance data, personal development plans, and a wide range of other important data, from anywhere via a password protected Intranet system. The University has a new up-to-date Virtual Learning Environment (VLE) that supports teaching.
- Our internationally-renowned library is one of the largest in the country offering you access to over 2.8 million items including resources to assist with your studies.

“ I chose Leeds as one of my options because of its reputation as a great university but after visiting the city for an open day, I was so impressed that it instantly became my first choice. Leeds is a fantastic city with a great student community and I definitely feel that I made the right choice. ”

Sean, Information Technology

# Learning and Assessment

You will experience a variety of teaching approaches that are designed to assist learning and maximise achievement.

## Our approach

Individual modules help you to develop sound theoretical knowledge and high-level practical skills. You will undertake formal written work, applied and technical assignments, interim progress checks, and both group and individual project work. Preparation for examinations is supported through coursework, revision sessions, and even mock exams.

Lectures are the primary form of teaching and these are supported by small group sessions and workshops. Many modules require laboratory-based classes and project work is supported through supervision meetings. Skill development is encouraged through group work, presentations, problem solving activities and through a focus on time-management.

Our personal tutorial system will help you integrate quickly and settle down easily into university life. During your time at Leeds you will have excellent student support, located close to where you work and study, ensuring personalised and direct contact. We pride ourselves on our friendly and supportive atmosphere.

You will be assessed by a variety of means including examinations, laboratory practicals, and reports. Progress is monitored and feedback provided through the regular submission of coursework, worksheets, laboratory exercises, and mock exams. Examinations can take the form of traditional, unseen papers, but often will take the form of a practical, laboratory-based test, or an open-book paper designed to test the application of curriculum content.

## Emphasis on project work

Our current students regularly say that project work is one of the most satisfying and challenging aspects of their course. This work provides an excellent opportunity for you to explore a subject further and to develop essential skills such as problem solving, communication skills and teamwork which are all vital to success in any career. Projects are particularly important in first year Project Management, second year Practical Problem Solving and Software Systems Engineering, third year Research Project and fourth year Group Project.

Our close links with industry mean that you will benefit from industrial input into design projects at a variety of levels, from setting projects through to more direct involvement in discussions and consultancy.

Recent examples of final year individual projects include:

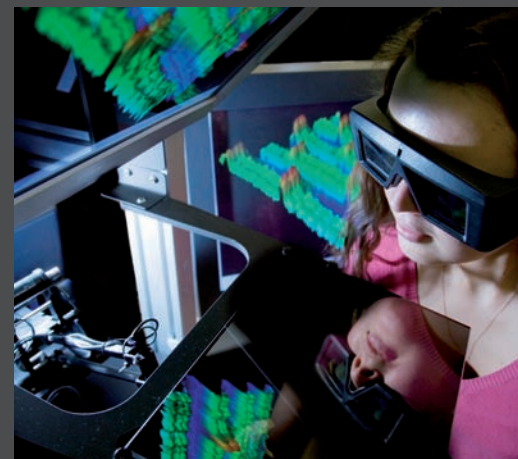
- Automatic Detection of Cancer in Lymph Nodes – a system capable of diagnosing a slide showing a section of lymph node as either healthy or cancerous.
- Eye Tracking with State-of-the-Art Radiography – using a head mounted eye tracker to help assess the way radiologists view and report on images taken with a state-of-the-art technique.
- Numerical Algorithms for Predicting Sports Results – details specially created algorithms which make use of data in order to predict the outcome of American Football games.
- Image-based Location Recognition for Navigating the University Campus – an image recognition system capable of detecting a specific location from a selection of campus photographs.
- Data Mining Tool for the Extraction of Concert Programme Information – demonstrates automated methods to extract 19th century concert information from plain or semi-structured text.

- Enhancing Online Photo Sharing with Location, Event & Family Tree Information – a web based photo sharing system that uses specific information to provide enhanced categorisation and querying capabilities.
- Building static robots to solve manipulative puzzles – Can a robot solve a Rubik's Cube faster than a human?
- 'Eyes Wide Open' – Finding Closed Eyes in Digital Photographs – detects closed eyes in digital images and replaces them with open eyes.

## Computing Ethics

As a student in the School of Computing, you will study computing ethics as part of your programme of learning. At Leeds, ethics is taught using real life case studies, with input from specialist ethicists as well as your tutors and lecturers. The team responsible for the ethics taught in computing have produced educational material used to stimulate debate in class about topics such as ethical hacking, open source software, and use of personal data.

This ethics teaching will enhance your reasoning and decision making skills which are crucial to employers, and will help you identify and respond effectively to ethical dilemmas that you will encounter in your professional life in the IT industry.



# Degree Courses

Our degree courses stem from the **School's research activities** which focus on both applications and scientific aspects.

The School's research themes of Theoretical Computer Science and Artificial Intelligence feature prominently in the curriculum giving you opportunities to gain insights into cutting-edge problems and their solutions.

Our undergraduate degree course in Information Technology is derived from our research expertise and focuses on how computing applications can benefit a range of organisations.

Artificial Intelligence, Computer Science and Computer Science with Mathematics degrees include core topics such as computer programming, operating systems, networking and Internet systems. More theoretical aspects include modelling and algorithms where you are expected to develop an understanding of how to prepare problems for solution on a computer.

## Integrated Masters (MEng, BSc)

Our Computer Science and Artificial Intelligence degree course are integrated masters (MEng, BSc) degrees providing you with great breadth and depth of study. You can graduate after 3 years with a BSc degree or continue for another year to complete the MEng, BSc which incorporates opportunities to further specialise in the areas of computing which are related to the research undertaken in the School.

## Benefits

If you choose to do an Integrated Masters (MEng, BSc) you will benefit from a greater breadth and depth of study. You will have the opportunity to work on a group project where you will jointly develop appropriate software systems and further enhance skills which are relevant to the IT profession.

Our integrated Masters will also help you develop practical transferable skills such as teamwork, decision making, delegation, identifying and solving problems, and communications skills. Recent graduates have said that they feel the Masters degree enhanced their employability and that they were able to achieve higher salaries.

“ I have gained confidence in performing my own research and have specialised in Scientific Computation further. An additional year has given me a broader and deeper understanding of the subject area. ”

Adam, Computer Science (MEng, BSc)

“ The Group IT division within Lloyds Banking Group has recently developed links with the School of Computing and look forward to working with them through 2012 to provide industry input to degree courses such as the BSc in Information Technology. Lloyds Banking Group has an exciting Business Technology Graduate programme which takes graduates each year, ideally with good commercial insight and an understanding of how technology can benefit the finance industry. Locally, we have a large IT presence in both Leeds and Halifax. ”

Lloyds Banking Group



# Information Technology (BSc) UCAS CODE G500

Information Technology provides the infrastructure for business. From communications and security to complex simulations, the application of our research specialisms increases the efficiency and effectiveness of operations.

Information Technology considers how cutting-edge computing techniques are applied to real-life problems, such as those found in commerce, healthcare, transportation, emergency services and the entertainment industry.

Our undergraduate degree course in Information technology is derived from our research expertise and focuses on how computing applications can benefit a range of organisations. Typical opportunities include:

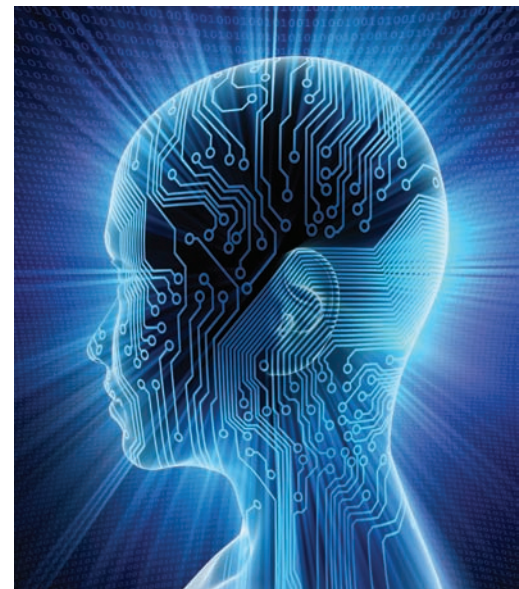
- Final year projects working alongside industrial contacts to develop business solutions
- Effective use of modern approaches, e.g. Cloud computing
- Social, ethical and legal issues in relation to data processing and access
- Participation in groupwork, gaining industry-based project management skills
- Understanding of real-life issues through the use of industry-based case studies.

## O2 mentoring scheme

One of the benefits of the course is the opportunity of taking part in the O2 mentoring scheme. This O2 mentoring scheme is a great opportunity for second year IT students to work on a project with O2 in areas such as business and technology. The mentoring scheme will run alongside your studies from September to Easter. You must apply to take part and you will be interviewed by O2. During your time working on various projects you will maintain a blog about experiences, deliver presentations and be involved in job shadowing. This scheme will provide you with valuable experience and an insight into how an international organisation works.

“The best aspect of this course is the variety; it embraces a variety of different but related modules. Each of them developed my skills in a particular subject and together they create specialist knowledge about IT management and techniques.”

Mohammad, Information Technology



“I have enjoyed the entire course so far but my personal favourite has been the web development module. I only had a very basic understanding of writing web sites before starting the course but since then I have learnt such a huge amount. I also enjoy being creative, so this module is great fun for me.”

Sean, Information Technology

# Course Structure

Information Technology

## Year 1

### Web Development

- Skills and techniques for developing static and dynamic Web content
- Usability and evaluation principles

### Project Management

- Tools and techniques for managing large-scale IT projects

### Simulation

- Modelling techniques for simulating real-world problems

### IT Infrastructure

- Hardware devices
- Web technologies, networking and operating systems
- The role and nature of computer programs

### Business Applications

- The IT infrastructure within organisations and its role in business efficiency
- Data security policies and procedures

### Professional Development

- Professional, social, legal and ethical issues in IT

## Year 2

### Programming

- Skills and techniques for developing computer programs
- Team working
- Software engineering

### Practical Problem Solving

- 'Hands-on' practical activities
- Research-led problems e.g. scheduling, web applications and databases

### Requirements and Evaluation

- Methods for gathering information and presenting findings
- Software development approaches

### Interactive Database Systems

- Fundamentals of databases
- Human computer interaction

### Strategy and Security

- Information security
- Business continuity
- Policies and procedures

### Decision Making

- Optimisation tools
- Sensitivity analysis

## Year 3

### Final Year project

- Individual project work under supervision of a member of staff

### Options from Research Applications

- Typical areas include visualisation, text mining, business optimisation, computer vision, distributed systems, biosystems, computer gaming

This module table gives you a flavour of what students will study. It is important to note that we regularly review the structure, content and assessment of our courses and may vary from time to time in the light of experience and new developments.

# Artificial Intelligence

(BSc) UCAS CODE G700 (MEng, BSc) UCAS CODE G702

Artificial Intelligence is increasingly important to everyday activities including computer games, Web searching, biometric systems and many other areas of modern IT.

The School of Computing is pioneering an integrative and broadly-based study of intelligent systems building on our internationally recognised research streams.

This includes: learning from images and video; corpus-based language processing; qualitative reasoning about space and time; and investigations into computational mechanisms in biological cells and organisms.

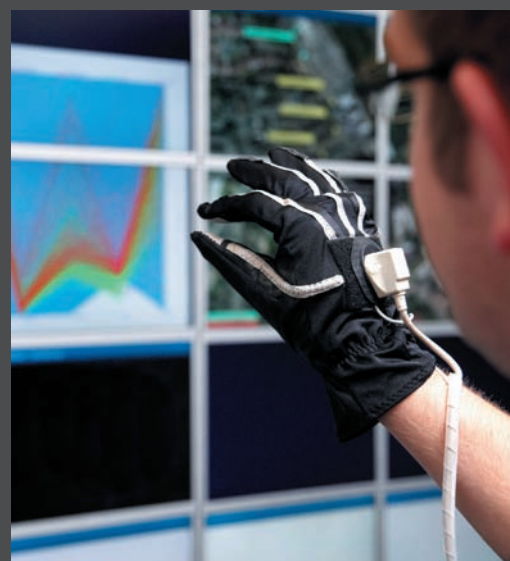
Our undergraduate degree course in Artificial Intelligence is derived directly from the research carried out by the School's world-class research institute.

This course is an Integrated Masters (MEng, BSc) which provides you with the option of completing the 3 year degree course leading to the award of a BSc, or extending to a 4th year leading to the

award of an Integrated Masters. This course also allows for further extension for those interested in including a year in industry or studying overseas.

#### Typical opportunities include:

- Final year projects that apply Artificial Intelligence techniques to problems in areas such as healthcare and crime prevention
- Designing computer vision systems that will recognise and track objects
- Web-based natural language processing and computerised approaches to language translation
- Developing computerised algorithms which are derived from biological systems and computational biology
- User-adaptive methods to tailor systems to individuals and groups



“ Deloitte are delighted to sponsor the School of Computing. We welcome the opportunity to provide our insight and expertise to the School's high achieving students. ”

Richard Gladman,  
Director in Technology Integration, Deloitte.

**Deloitte.**

# Computer Science (BSc) UCAS CODE G400 (MEng, BSc) UCAS CODE G402

**Computer Science is at the cutting-edge of efforts to generate and apply future generations of technology.**

**The solution of real-world problems such as those relating to climate change, medicine or financial affairs requires Computer Scientists with advanced skills and knowledge in modelling and algorithm design.**

Our undergraduate degree course in Computer Science includes core topics such as computer programming, operating systems, networking and Internet systems. In addition, specialist areas that focus on computationally challenging problems are developed through teaching and project work.

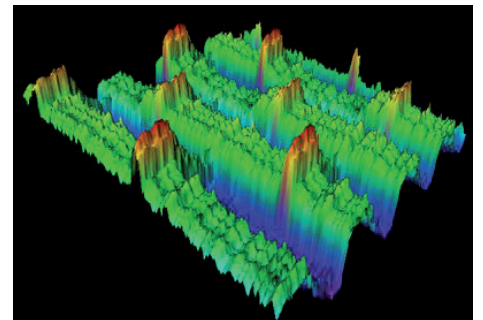
This course is an Integrated Masters (MEng, BSc) which provides you with the option of completing the 3 year degree course leading to the award of a BSc, or extending to a 4th year leading to the award of an Integrated Masters. This course also allows for further extension for those interested in including a year in industry or studying overseas.

**Typical opportunities include:**

- Final year projects that use a range of high resolution and large screen displays, including a Powerwall (53-million pixel display wall)
- Writing portable parallel programs
- Developing efficient mathematical algorithms which can be applied to problems in areas such as finance, weather prediction and biology
- Understanding problem complexity and mathematical techniques for improving the efficiency of solution approaches
- Exploring the uses and security of large scale system architecture

**“The best aspect of the course was the range of modules. Having the opportunity to undertake a wide variety of modules is an excellent way of gaining an appreciation of all aspects of the computing discipline.”**

**Charles, Computer Science**



# Course Structure

Artificial Intelligence and Computer Science

## Year 1

### Common to both degrees

#### Programming

- Skills and techniques for developing computer programs
- An appreciation of different programming languages and their features
- Use of the Python to demonstrate programming fundamentals

#### Mathematics

- The essential underpinning of all computing activity
- Topics such as logic, set theory, functions, matrices and probability

#### Systems and Networks

- Web technologies and their deployment
- Networking and the Internet

#### Modelling

- Understanding how processes can be described
- Techniques for presenting processes
- Elementary understanding of the concept of efficiency

#### Professional Development

- Professional, social, legal and ethical issues in IT

#### Project Management

- Tools and techniques for managing large-scale IT projects

## Year 2

### Common to both degrees

#### Software Engineering

- Developing large-scale computer programs using Java
- Team working
- Project management

#### Practical Problem Solving

- 'Hands-on' practical activities
- Research-led problems e.g. scheduling; web applications and databases

#### Artificial Intelligence

- Topics including text mining, speech processing and knowledge representation

#### Interactive Database Systems

- Fundamentals of databases
- Human computer interaction

#### Numerical Computation and Visualisation

- Solving discrete problems
- Numerical analysis
- 3D graphics

#### Theoretical Computer Science

- The design of efficient algorithms and graph theory for modelling
- An understanding of the role of algorithms and modelling in modern computer science



## Year 3

### Artificial Intelligence

#### Final Year project

- Individual project work under supervision of a member of staff

### Artificial Intelligence

- Advanced topics include computer vision, natural language processing, knowledge representation, biological and bio-inspired computation

#### Options

- Optional modules include Visualisation, and Theoretical Computer Science

### Computer Science

#### Final Year project

- Individual project work under supervision of a member of staff

### Theoretical Computer Science

- Advanced topics include distributed systems, combinatorial optimisation, algorithms and complexity, parallel scientific computation

#### Options

- Optional modules include Visualisation and Artificial Intelligence

## Year 4 (MEng)

### Artificial Intelligence

#### Group project

- Group project related to the advanced material in Artificial Intelligence

### Computational Modelling

- Modelling and simulation techniques
- Statistical and graphical analysis

### Scheduling

- Appreciation of real life scheduling problems and software solutions

### Machine Learning

- Machine learning algorithms and their capabilities and limitations

### Bio-inspired Computing

- Topics including genetic algorithms, neural networks and cognitive neuroscience

### Knowledge Representation and Reasoning

- Formal representation and automated reasoning

#### Options

- Optional modules include Knowledge Management, Algorithm Design, and Distributed Systems

### Computer Science

#### Group project

- Group project related to the advanced material in Computer Science

### Computational Modelling

- Modelling and simulation techniques
- Statistical and graphical analysis

### Scheduling

- Appreciation of real life scheduling problems and software solutions

### Machine Learning

- Machine learning algorithms and their capabilities and limitations

### Scientific Computation

- Nonlinear partial differential equations
- Efficient direct and iterative solution algorithms for linear equation systems

### Algorithm Design

- Sorting and searching algorithms and time complexity

#### Options

- Optional modules include Knowledge Management, Distributed Systems, Natural Language Processing, Computer Vision, Bio-inspired Computing

This module table gives you a flavour of what students will study. It is important to note that we regularly review the structure, content and assessment of our courses and may vary from time to time in the light of experience and new developments.

## Computer Science with Mathematics (BSc) UCAS CODE G4G1

This degree course allows you to combine learning computing fundamentals with study in the School of Mathematics.

**The computing component of the degree will equip you with the fundamental aspects of the discipline including computer programming, modelling and computer systems. Pure and Applied mathematics topics which are closely related to the computing discipline will provide breadth and a deeper numerical knowledge.**

This course emphasises the special relationship between mathematics and computer science and allows you to specialise in aspects of theoretical computing and logic, or scientific computation and applied mathematics.

You will study in both the School of Computing and School of Mathematics. This degree provides you with excellent preparation for a career in the computing industry or further study in one of the component disciplines.

The course is ideal if you are wishing to pursue a career in, for example, the Met Office, GCHQ, Shell and in engineering, government or finance including the stock market. This course draws together a practical understanding of software engineering and systems with the skills of analysis and modelling to investigate particular problems in computing.

Theoretical computing explores the development and efficiency of algorithms which should be applied to computationally complex optimisation problems. It provides the key foundations for developments in networking, security and databases. Scientific computation focuses on computational techniques and the implementation of numerical analysis for solving partial differential equations. This has applications in areas such as, combustion, atmospheric dispersion, printing on textiles, and often utilises parallel computing and Grid technologies.



# Course Structure

Computer Science with Mathematics

## Year 1

### Programming

- Skills and techniques for developing computer programs
- An appreciation of different programming languages and their features
- Use of the Python to demonstrate programming fundamentals

### Modelling

- Understand how processes can be described
- Techniques for presenting processes
- Elementary understanding of the concept of efficiency

### Modelling with Differential Equations

- The theory of differential equations and their application to e.g. the way in which population varies with time

### Numbers and Vectors

- Differential and integral calculus

### Systems and Networks

- Web technologies and their deployment
- Networking and the Internet

### Linear Algebra

- Simultaneous equations and the notions involved in matrices and vector spaces

### Introduction to Probability

- Key issues including binomial, Poisson, exponential and normal distributions

### Introduction to Statistics

- The relationship between variables, including techniques for handling data

### Calculus and Mathematical Analysis

- Study of complex numbers and an introduction to mathematical analysis in discussions of the limits of a sequence

## Year 2

### Software Engineering

- Developing large-scale computer programs using Java
- Team working
- Project management

### Theoretical Computer Science

- The design of efficient algorithms and graph theory for modelling
- An understanding of the role of algorithms and modelling in modern computer science

### Interactive Database Systems

- Fundamentals of databases
- Human computer interaction

### Numerical Computation and Visualisation

- Solving discrete problems
- Numerical analysis
- 3D graphics

### Options

- Restricted set of Mathematics modules dependent on choice of specialism

## Year 3

The degree programme includes options: The following provides a flavour of what students may study

### Final Year project

- Individual project work under supervision of a member of staff

### Theoretical Computer Science

- Advanced topics including complexity theory and optimisation

### Mathematics

- Restricted set of Mathematics modules dependent on choice of specialism and prerequisites. Applied mathematics options include partial differential equations, modelling with fluids, cosmology. Pure mathematics options include computability, coding theory, combinatorics

### Parallel Scientific Computing

- Design algorithms to make efficient use of parallel architectures
- Predict and measure the efficiency and scalability of an implementation

### Distributed Systems

- Understanding middleware technologies and Web services
- Naming, resource discovery and synchronisation

This module table gives you a flavour of what students will study. It is important to note that we regularly review the structure, content and assessment of our courses and may vary from time to time in the light of experience and new developments.

# Shaping Your Future

**Graduates from the School of Computing have excellent job prospects. The continuing application of computer technologies and the introduction of new technologies in the future will ensure that demand for our graduates continues to rise.**

The School of Computing has very strong links with the IT industry; just one of many reasons why Leeds graduates are highly sought after by employers. An Industrial Advisory Board contributes to the continuing development of the School's degree courses ensuring that material is up to date and consistent with employers' needs. Our staff also work with various companies on a range of teaching, research and consultancy projects.

The School also organises a range of industrial visits and offer additional seminars delivered by practising IT professionals. This means that you have direct contact with industry, and potential employers, from an early stage in your course.

Here are just a few examples of our involvement with industry

- O2 offers a new mentoring scheme for second year IT students. This mentoring scheme provides students with the opportunity to work on a project within O2 over a six month period
- IBM contributes to the assessment of the second year group software engineering project and awards a prize to the best group
- Deloitte, IBM, CSC and RNLI contribute directly to the first year professional development module and actively support the IT degree
- Ordnance Survey, British Library, Department of Health and Reckitt Benckiser provided ideas for projects in recent years
- CSC, Deloitte, PriceWaterhouseCoopers, and Lloyds Banking Group have recently delivered presentations to our students

## **O2 Mentoring Scheme**

The O2 mentoring scheme is a great opportunity for second year IT students to work on a project with O2 in areas such as business and technology. More details about the scheme can be found on page 5.

## **Chartered Status**

British Computer Society (BCS) accreditation will help you apply for Chartered status after graduation. Our Computer Science degree course is accredited and accreditation is being sought for our Artificial Intelligence and Information Technology degree courses.

## **Further study**

Your careers prospects after graduating are excellent. However, you may decide that you want to continue your studies to postgraduate level before entering the job market. We offer several Masters courses and opportunities for research at MSc, MPhil and PhD level.

## **Work experience**

All of our courses allow you to undertake work experience as part of your degree in the form of a year long industrial "sandwich" placement, or shorter project work and summer internships which will help you develop essential employability skills.

## **Industrial Placements**

The Industrial Placement is taken between the second and third year of the degree and graduates will have the word 'Industrial' added to the degree title. A placement year can help you gain the skills valued by employers, as well as developing enterprise skills. Recent industrial placements have been undertaken in organisations including:

- Department of Health
- BT
- Microsoft
- Leeds City Council
- IBM UK Ltd
- TD Waterhouse
- CSC
- Tracsis plc
- Astra Zeneca

## **Internships**

From time to time funding becomes available for student internships. For example, the Alumni Research and Leadership Scholarship allows students to develop skills and interest in academic research. The Employability Internship Scheme recruited two students for each School in the Faculty of Engineering to develop communication plans to support employability engagement activities. Student research interns work in the School's laboratories under the supervision of our research staff, contributing actively to current research projects.

## **Study Abroad**

The Study Abroad option is available on our courses. You may choose to spend a year of your course studying abroad at a university in Europe, North America or even the Far East. Increasingly valued by employers, this option provides you with a fantastic opportunity to experience life in another country and a different culture. Other students who have participated say that they found it a life-changing experience. The Faculty of Engineering has links with a wide range of partner institutions from Spain to Singapore. The Study Abroad programme can help you gain confidence, broaden your horizons and develop skills and experiences which can improve your employability.

**“ I worked as a software engineer at IBM for my year in industry placement and I found the experience I gained was invaluable. I had the opportunity to develop both my technical and non-technical skills that I had previously learnt at University. I have come back to University with a much greater focus and sense of purpose about the course I am studying. ”**

**Oliver, Computing**

# Careers and Support



If you possess foreign language skills, ERASMUS exchanges are available to several European countries. You may be able to take an additional module in your first year to brush up your language skills if you wish to take part in this programme. Another programme, Worldwide Exchange offers exchanges with partners in the USA, Canada, Singapore and Hong Kong.

Find out more at [www.leeds.ac.uk/studyabroad](http://www.leeds.ac.uk/studyabroad)

## Careers

All of our degrees will equip you with the skills you need to succeed in industry. From design, problem solving, numeracy and analysis skills, to 'transferable skills', such as communication and teamwork, you will be highly valued by employers.

The IT profession includes a range of specialist roles, from technical roles in software engineering to project management roles and consultancy. Employment prospects for Leeds graduates are excellent and the School is regularly approached by organisations wishing to recruit our graduates. 86%<sup>1</sup> of our recent graduates have either gone on to further study or have successfully secured positions with organisations across a range of industries including manufacturing, retail, finance, public authorities and consultancies. Recent graduate destinations include: Barclays, BT Group – Openreach, CSC, EMIS, Ernst and Young, Fujitsu, Goodrich ISR Systems, Imagination Technologies Ltd, Microsoft and PepsiCo.

According to the BCS (The Chartered Institute for IT) the average starting salary in the IT industry is around £22,000. Entry level salaries can start at £19,000 for a technical support officer, rising to £25,000 for a software engineer. Across the industry IT professionals can earn an average of £38,000; this can be significantly higher in more specialist fields and in different parts of the country.<sup>2</sup>

The School of Computing and the University have developed a range of services that will provide you with the necessary resources and support to help you achieve your goals.

## Leeds for Life

Leeds for Life is a concept which informs the way staff, students, schools, services and alumni work together to ensure you get the most out of university life from day one. Developed in partnership with students themselves, the Leeds for Life website helps identify opportunities to develop your skills, and provides you with an online 'living CV' so that you can understand the value of your skills and knowledge and articulate the benefits of your University of Leeds experience.

At the heart of Leeds for Life is personal tutoring where you receive structured one-to-one meetings to support your personal and academic development. This ensures that you not only do well in your degree, but also become a confident, articulate and highly employable graduate.

For more information about Leeds for Life visit [www.leeds.ac.uk/leedsforlife](http://www.leeds.ac.uk/leedsforlife)

## Engineering and Computing Careers Fair

As part of our 'Employability Month' in the autumn, the Faculty holds an annual Engineering and Computing Careers Fair attracting over 32 graduate recruiters including organisations such as 2e2, AECOM, Atkins, BP, Deloitte, Ernst & Young, Her Majesty's Government Communications Centre, Interfleet Technology Ltd, Network Rail, Procter & Gamble Product Supply, PwC and Unilever Leeds, to name but a few.

The Fair provides students with the chance to explore the opportunities available after graduation. It is also a great opportunity for the Faculty to develop links with these organisations both for summer placements and future employment.

As well as the Engineering Careers Fair, you can explore career opportunities at many other careers fairs and presentations that are organised throughout the year by the University's Careers Centre. The Employability Month also see visits from some of the UK's top recruiters who deliver presentations and workshops specifically for our engineering and computing students.

## Careers Centre

Our on-campus Careers Centre is one of the largest in the country. It offers an excellent range of services and has a great relationship with graduate recruiters. The Careers Centre is the place to get advice about what to do after university, help with finding work experience, improving your CV and dealing with job applications. The Careers Centre also holds training events and workshops to assist you with your career progression.

More information on the Careers Centre can be found at [www.careerweb.leeds.ac.uk](http://www.careerweb.leeds.ac.uk)

“ We are delighted to have forged a link with the School of Computing through which we can not only promote the opportunities we have to offer but also help students develop their employability skills. We have a range of graduate and undergraduate roles available which include Data Assurance, ERP and IT Risk & Security (all within Risk Assurance) which may be of particular interest to students studying a computer science related course. ”

PwC | Student Recruitment  
Campus Engagement Leader



1 2009 DLHE Survey for the Faculty of Engineering and UK students

2 Source: BCS and Prospects

# Entry Requirements and How to Apply



All undergraduate applications should be made through the Universities and Colleges Admissions Service (UCAS). Full instructions on how to apply are available at [www.ucas.com](http://www.ucas.com).

The majority of applicants apply with GCE A-levels, although a wide range of other qualifications are welcomed (for example the International Baccalaureate, BTEC qualifications, French Baccalauréat, Arbitur, etc.).

If you have any queries about entry requirements please contact the Undergraduate Admissions Team using the contact details on page 18. Minimum A-level offers are detailed in the table below.

Award Title	UCAS Code	A Levels	Advanced Diplomas
Information Technology (BSc)	G500	AAB including GCSE Mathematics at grade B or higher	Engineering or IT Diploma grade A plus evidence of a significant element of Mathematics studied as part of the Diploma
Artificial Intelligence (BSc) (MEng, BSc) Computer Science (BSc) (MEng, BSc)	G700 G702 G400 G402	AAB including Mathematics	Engineering or IT Diploma grade A plus A level (A2) Mathematics at grade B
Computer Science with Mathematics (BSc)	G4G1	AAB including Mathematics at grade A	Engineering or IT Diploma grade A plus A level (A2) Mathematics at grade A

There is also a Pre-Sessional Programme for students who have fulfilled the English requirement but would like to improve their academic language skills before starting their degree. You can find more information on the Language Centre website at [www.leeds.ac.uk/languages/lc\\_home.html](http://www.leeds.ac.uk/languages/lc_home.html)

#### Foundation Year for international students

The University of Leeds also offers a Foundation Year for international students in Engineering, which can provide an alternative entry to our degree courses. This one-year course is available to international students with a background equivalent to AS-level, for example the School Leaving Certificate.

You can apply directly to the University using an application form which can be downloaded from the Foundation Year website <http://www.leeds.ac.uk/international/foundation.htm> Alternatively you can request an application form by emailing [intfyear@leeds.ac.uk](mailto:intfyear@leeds.ac.uk)

#### Fees and Finance

2012 is a year of significant change to the way the government funds higher education in the UK. At the time of going to press, not all of the details have been finalised. However, we do know that if you are a UK or EU student studying a full-time course there will be no upfront payments for tuition fees. This also applies to part-time students on most programmes of study. It is crucial that you keep up to date with the changes to fees and details of the financial support available to you by checking the University's website regularly at: [www.leeds.ac.uk/yourfinances](http://www.leeds.ac.uk/yourfinances)

#### International Applications

The University of Leeds is a truly international university; each year approximately 500 students from outside the UK choose Leeds and the Faculty of Engineering as their study destination. International applications are made through the UCAS (Universities and Colleges Admissions Service). Full instructions on how to apply are available at [www.ucas.com](http://www.ucas.com)

We have many international students and we make offers with reference to most recognised national and international qualifications on an individual basis. If you have any queries about our entry requirements for your country you can visit [www.engineering.leeds.ac.uk/faculty/undergraduate/equivalent-qualifications](http://www.engineering.leeds.ac.uk/faculty/undergraduate/equivalent-qualifications) or you can contact the Undergraduate Admissions Team. We also offer a number of competitive scholarships to students from outside the UK and European Union.

#### English language requirements

There are certain minimum qualifications for entrance to the University and the most important of these is a qualification in English language. International students must have an English language qualification at a suitable level, for example IELTS 6.0 or TOEFL. A pass at GCSE in English language (grade C or above) or a pass in the Communications Skills course of the BTEC scheme would satisfy the requirements.

#### Language Centre

The University's Language Centre offers several courses to help international students improve their English language skills. If you have not yet reached the University's English requirement you can take the Pathway English Language Programme, intended specifically for those who are applying for, or planning to apply for, an undergraduate degree, but who need to improve their level of English to meet the University's requirements.

# Recognising Excellence

We are committed to challenging and supporting our students and to recognising hard work and achievement. That is why we have a wide range of scholarships and prizes aimed at new and current students.

## Undergraduate Achievement Scholarship

The Faculty of Engineering is offering scholarships of up to £4,000 to all new Home/EU rated fee-paying students who start an engineering or computing undergraduate degree course at the University of Leeds. This is an automatic scholarship awarded to students who achieve A\*AA grades at A-level (A2). The grades must be in subjects required for the course. For example if the course requires A-level maths, one of the A or A\* grades must be in maths. Students must be new to the University and enter onto level 1. The payment of the scholarship is spread over 4 years and is subject to satisfactory progression.

## Excellence Scholarships

For international students we have a number of Excellence Scholarships worth £4,000 towards the cost of full tuition fees for each year of the course (subject to satisfactory progression). There is an application deadline of 30 June for this scholarship.

For more information on both these scholarships please visit:  
<http://www.engineering.leeds.ac.uk/scholarships>

For details on other scholarships offered by the University, including scholarships for International students, please contact the School's Undergraduate Admissions Team.

## Prizes and Awards

### Dean's List

This is a prestigious award given to the highest achieving students.

### School Prizes

A number of prizes, many sponsored by industry, are awarded each year to students who achieve highly (e.g. best student in year) or undertake an exceptional project.



# Your City, Your University, Your Choice - The perfect place to live and learn

**Join a community of over 30,000 students on a vibrant, friendly single-site campus just ten minutes walk from one of the liveliest and cosmopolitan cities in the UK.**

## Your university

The University of Leeds is one of the UK's top universities. Gaining its Royal Charter in 1904, we are part of the prestigious Russell Group – the 20 leading research universities in the UK, and are well known throughout the world for our quality of teaching and research. In fact, last year students came to us from over 130 countries. Our degrees are also well respected by employers and universities worldwide, and the Times Higher Education (THE) gave us an Employer Review of 99%.



Some key facts about our university:

- One of the original six civic 'red-brick' universities
- One of largest single campus universities in the UK (98 acres) just 1 mile from the city centre
- Home to 30,000 students from over 130 countries
- A thriving students' union, located at the heart of the campus, it is one of the most active in the UK. We've recently been voted NUS Students' Union of the Year 2009/10 and we are also one of only two of the UK's Gold Accredited Unions.
- Over 260 clubs and societies – from national groups such as the Chinese Society to more unusual pursuits including scuba and sky-diving
- A £360m investment in new buildings and facilities
- Multi-million pound fitness centre – the Edge, including 25m pool, 200 station fitness suite, squash courts, climbing wall

## Your city

A multi-cultural, student friendly city, Leeds has been called the Knightsbridge of the North. And once you visit Harvey Nichols and our famous Victoria Quarter shops, you'll see why. But our city offers so much more than shopping...

- Leeds regularly tops the polls as the UK's favourite student destination
- Student focused and friendly – with over 300,000 students in the city
- Thriving music scene with the University's refectory and the newly opened Carling Academy attracting top bands
- City art galleries, theatres and museums, including the famous Royal Armouries and one of the UK's largest regional repertory theatres, the West Yorkshire Playhouse, provide culture and entertainment
- A huge range of sports clubs and facilities from Leeds United's Elland Road to Headingley's famous cricket ground
- An array of bars, cafés and restaurants – to suit all tastes and budgets.

With all this music, arts, entertainment and nightlife, Leeds is a flourishing cultural hub – illustrated by the thriving student community. This, combined with our location right in the centre of the UK making us easy to get to and from, plus the relative affordability of Yorkshire means Leeds is the perfect city in which to live and learn. Come and see for yourself – we look forward to meeting you.

## Accommodation

We know how important finding the right accommodation is, so the University guarantees accommodation for all first-year single undergraduates who apply before July of the year of entry. More information about University accommodation and how to apply is available on our accommodation office website, visit: [www.leeds.ac.uk/accommodation](http://www.leeds.ac.uk/accommodation)

All residents (excluding family and summer contracts) in University accommodation receive an Edge Club membership included in the rent. This membership will provide you access to The Edge, the University's flagship fitness, sport and wellbeing facility. [www.leeds.ac.uk/theedge](http://www.leeds.ac.uk/theedge)



# Visit Us



Potential applicants are encouraged to attend a University Open Day. There are General University Open Days (normally held in June and October), where applicants can look around the campus, visit the School and talk to admissions staff. Details can be found at <http://www.leeds.ac.uk/students/opendays>. For potential applicants who cannot attend, an individual visit may be arranged.

Applicants are typically asked to attend an informal interview before a place is offered. This allows applicants to gain an impression of student life at Leeds and for the Admissions Team to assess suitability for the course. On the same afternoon there will be a presentation and opportunities to learn more about the degree programmes, inspect and use the computer facilities, and tour the campus. There will also be an opportunity to talk to both staff and students in the School. Guests are welcome and there will be separate arrangements made for them.



## Contact Us

For information about our degree programmes and entry requirements contact:

### Undergraduate Admissions Team School of Computing University of Leeds

Leeds LS2 9JT, UK  
t: +44 (0)113 343 5821  
f: +44 (0)113 343 5468  
e: [ugadmit@comp.leeds.ac.uk](mailto:ugadmit@comp.leeds.ac.uk)  
w: <http://www.engineering.leeds.ac.uk/computing/>

For information about student fees, fees status and LEA enquiries contact:

### Student Recruitment and Marketing Team

Blenheim Terrace  
University of Leeds  
Leeds LS2 9JT  
t: +44 (0)113 343 3999  
f: +44 (0)113 343 3877

For information about the **International Foundation Year** contact:

International Foundation Year  
Marjorie and Arnold Ziff Building  
University of Leeds  
Leeds LS2 9JT  
t: +44 (0)113 343 3209  
f: +44 (0) 113 343 2264  
e: [intfyear@leeds.ac.uk](mailto:intfyear@leeds.ac.uk)  
w: <http://www.leeds.ac.uk/international/foundation.htm>

For information about undergraduate applications contact:

**UCAS code: L23**  
UCAS  
PO Box 67  
Cheltenham,  
Gloucestershire,  
GL50 3SF  
Website: <http://www.ucas.com>



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For current information on courses, fees and entry requirements please visit our website at [www.engineering.leeds.ac.uk](http://www.engineering.leeds.ac.uk)

Whilst the University endeavours to ensure that the information contained in this brochure is accurate at the date of publication, it does not accept liability for any inaccuracies. Where matters arise outside of the reasonable control of the University it reserves the right to change or cancel its courses or services at any time without liability even after students have registered at the University. The University's contract with its students does not confer third party benefits for the purposes of the Contracts (Rights of Third Parties) Act 1999.

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