



CARDIFF
UNIVERSITY

PRIFYSGOL
CAERDYDD

School of Computer Science and Informatics

Undergraduate Degree Programmes

www.cardiff.ac.uk/computer-science

www.cardiff.ac.uk/software-academy

Welcome to our School

Over 220

academic and
industrial partners
across the globe.

“The School has
a world-class
reputation and
innovative
courses.”

Rob Hemsley, former student

93% of our
graduates are
in employment
or further study
within 6 months of
graduating.

Source:
HESA Destination of Leavers Survey 2016/17



Plenty of opportunities to work and study **abroad.**



Accredited
by the BCS,
The Chartered Institute
for IT.



“I fell in love with the practical approach that the course took.”

Caitlin Burns,
current student

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Choose Cardiff

We offer a supportive environment in which to learn, think and develop vital professional skills and knowledge.





We aim to share the excitement of current technological trends with our students, educating and inspiring the next generation of leaders in Computer Science.

I am delighted that you are considering studying at the School of Computer Science and Informatics at Cardiff University. With a tight network of industry partners, a cutting-edge research community, and wide-ranging courses and modules for you to choose from, there has never been a better time to join us.

During your time with us, we will do everything we can to help you achieve your potential; giving you the knowledge, skills and experiences for a fulfilling career and future.

Led by passionate computer scientists and technologists at the forefront of their fields, we provide outstanding education and careers support to provide you with an exciting range of opportunities.

I think it's important that when you choose a university and degree, you find somewhere where you will be happy and have the best chance of success. To help you make the best decision for you, I invite you to visit us at one of our Open Days where you can see for yourself what it's like to study at Cardiff.

In this brochure, you'll find specific information on your specialist subject and the opportunities available to you during your studies and after you graduate. If you have any further questions, please get in touch and we will do everything we can to help.

I hope to welcome you to Cardiff in the near future and on behalf of all of the staff here at the School of Computer Science and Informatics, I wish you every success with your studies.

Professor Stuart Allen
Head of School



Why study with us?

From innovative teaching to flexible courses, there are plenty of reasons to study at the School of Computer Science and Informatics.



With our support and your commitment, we believe we can help you to build the future you want.

Here are our top five reasons to study at the School of Computer Science and Informatics:

Connections with industry

Take advantage of our strong links with industry and go on a placement as part of your studies. Short-term summer placements are a key component of all of our degree programmes. Our Computer Science degrees also have the option to complete a one-year placement during year three.

A placement is a great way to gain valuable work experience with a company like Admiral, Airbus, CERN, GSK, Hewlett Packard, Lloyds Bank, Estée Lauder or Red Bull Racing.

You will gain a clearer understanding of what it's really like to work in your chosen field, as well as developing key skills such as communication, teamwork, leadership and self-management. Many placements are paid, so you will also have the opportunity to earn a wage, to help support your studies.

Flexible courses

Our courses are highly flexible, and allow you to mould your career as your aspirations develop. You can keep your degree broad with a three-year BSc or a four-year MSci in Computer Science, or specialise in an area of your choice, from Applied Software Engineering to Security and Forensics.

Most of our degrees have a common first year, so in most cases you're free to switch between programmes at the end of year one if your interests change.

Alongside learning core topics, you can specialise your degree through a range of optional modules as you progress through the course.

Great student experience

We offer a supportive, well-equipped environment, with so many activities available there's bound to be something for you.

Our School has a host of extracurricular activities including Cardiff Autonomous Racing - a student team established to tackle driverless racing as part of the Formula

Student competition, Technocamps, CyberSoc (Cyber Security Society), and the STEM (Science, technology, Engineering, Mathematics) Ambassador Scheme. CompSoc, our award-winning Computer Science Society, also organise a range of events throughout the year.

To help you settle into your first year, you will be allocated an academic member of staff as a Personal Tutor and an experienced student as a Student Mentor.

Academic excellence

As a Russell Group University, we're committed to maintaining the very best research, an outstanding teaching and learning experience, and strong links with industry.

In the 2014 Research Excellence Framework, (REF) 99% of our submitted research was rated at least of international standard with 79% classed as "internationally excellent" or "world-leading".

Our teaching was awarded the highest rating in our most recent UK Teaching and Quality Assessment and all our degrees are professionally accredited by the BCS, The Chartered Institute for IT.

Excellent job prospects

Everything we do at the School of Computer Science and Informatics is about setting you up for a successful career, which is why more than 93% of our graduates are in employment or further study within six months of graduating.

In an increasingly competitive job market, our courses will give you the specialist knowledge and professional skills that make you attractive to potential employers.

Our graduates go on to work in a wide variety of careers, ranging from web and software development to systems analytics, cyber security and academic research.

Our Careers and Employability service is here to help and support you, offering everything from CV workshops, one-to-one advice, interview practise sessions and careers fairs with top employers.

Location and facilities

We've made sure that our environment and facilities meet all of your needs to ensure you achieve your potential.



The School of Computer Science and Informatics is moving into an exciting new purpose-built facility in the academic year 2021/2022.

Shared with the School of Mathematics, the new building has been designed in collaboration with students and lecturers to create interdisciplinary, flexible and creative workspaces, with innovative teaching areas and practices being a key feature.

The new facility will also allow:

- Support of student community by encouraging peer support with spaces for academic mentoring, a MakerSpace to test ideas, and dedicated spaces for student projects.
- Greater collaboration with industry in teaching, research and engagement.
- Opportunities for greater interdisciplinary collaboration, underpinned by world-class research in areas such as data science.

This is part of the University's biggest campus upgrade for a generation, including an investment of £260m in its teaching, learning and student experience.

The School will still be located close to the Students' Union, two student residences, and a short walk from the city centre.

Research facilities

A diverse range of facilities and systems underpin our cutting-edge research, including clusters and cloud environments, a dedicated GPU processing farm, and a face and motion tracking laboratory. Researchers can also take advantage of the resources of the University's multi-million-pound Advanced Research Computing facility (ARCCA).

We also have dedicated resources for:

- Motion capture
- 3D data capture
- Knowledge representation and reasoning
- Cloud computing
- Computational modelling
- Internet of Things research
- Computational music



Artist's impression of our exciting new purpose-built facility



Extracurricular activities

We encourage all of our students to take part in extracurricular activities. It's a great way to meet new people and have some fun. It can also help you break out of your comfort zone, and in some cases, even improve your future career prospects.

Final year student Kara Bennett highlights how she has made the most of what is on offer:

In my first year:

I became a STEM ambassador helping with Offer Holder and Open days and Networking events.

During the summer, I participated in the CUROP/CUSIEP scheme, developing a Microsoft Word Add-In to help students in the Chemistry department format their scientific reports.

I also participated in a Global Opportunities project to Namibia, myself and nine other students helped to raise awareness of Heart Health alongside 40 students from a local school. My specific role included developing a website for the campaign and teaching web design to some of the students.

I worked the Summer Schools (Discovery, Confident Futures, and Step Up) organised by the Outreach team.

In my second year:

I was promoted to Lead STEM Ambassador, where I was responsible for training new ambassadors, developing new workshops, helping to organise the calendar of events, and leading a variety of teaching workshops for students age 7+.

I also continued working with the Outreach team, assisting with their masterclass events and again helping with the Summer School programme.

I was a student mentor in my second year and won the Student Mentor of the Year for Computer Science.

I began attending **Languages For All** classes for Japanese, which I also attended over the course of my placement year and into my final year progressing to Intermediate Stage part 2 thus far.



For my placement:

I worked for the University as a Development and Delivery Officer as part of the Institute of Coding programme.

During my placement, I secured a summer internship with Admiral Group as a web developer which I began at the end of my placement. At the end of this internship, I was offered part-time work which I currently do alongside my final year studies and have been offered a full-time job with Admiral Group upon graduating.

I am currently working towards completing my Cardiff Award.

CompSoc

In our students' award-winning society, members mix across all degree programmes, year groups, and even come from other Schools. The society's main goal is to bring students together to network, socialise and above all, have a fantastic time at Cardiff. They have regular socials; last year they visited Bletchley Park, did some karaoke, hosted film nights, pub quizzes and a hackathon.

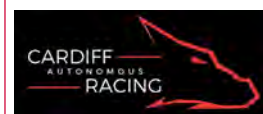
Cardiff Autonomous Racing

Autonomous vehicles are the next milestone in the technological development of our civilisation, and will likely be a crucial part of our smart city future.

Cutting edge research and development within motorsport is a perfect platform on which to test solutions to these future challenges.

Formula Student (FS), Europe's most established educational engineering competition, have recently announced the introduction of an autonomous (driverless) racing category as part of the competition.

The Cardiff Autonomous Racing team was established in 2017 following the stellar success of the Cardiff Racing team in order to tackle this challenge. The team is comprised of students from the schools of Computer Science and Informatics, and Engineering, with combined expertise in computer vision, AI, machine learning, robotics, and electronics. Cardiff Autonomous Racing are determined to tackle autonomous racing challenges with their innovative engineering solutions. Preferring, as always, elegance and simplicity of their designs, Cardiff Autonomous Racing chose an apt motto for this year: to build **#SomethingThatWorks**





CyberSoc

Since its pizza-filled launch in November 2019 with the debut 'Step into Cyber' event, backed by Big Four giant PwC's Ethical Hacking team, CyberSoc has gone from strength to strength, securing super interesting events with leading employers.

Alert Logic, PwC, Tarian, BT and more are strongly connected with the society to be able to provide truly leading sessions for the student community. Students are always well fed and watered, and best of all completely for free.

Strong relationships have been forged in both industry and academia to introduce those from all degree disciplines into the world of cyber and provide everybody with fantastic networking opportunities to learn about the industry from those who already have vast experience of the sector.

The society has worked together as a team to act in the best interests of its members, with perhaps the most substantial achievement

being the highly successful production and deployment of an Open Source Intelligence-based CTF game, which CyberSoc then released for the public to play, attracting hundreds of people from around the world.

Twitter @CUCyberSoc

Engagement activities

Give a little back to the local community by supporting our events with our industry partners. Your contribution can bring long-lasting benefits to our aspiring communities. It's also an opportunity to strengthen your skills and a nice addition to your CV.

STEM Ambassador Scheme

Our team of student STEM (Science, Technology, Engineering, Mathematics) Ambassadors engages and encourages young people to study STEM subjects and progress into related careers, through coding and computer science workshops at local primary and secondary schools.

Technocamps

This Welsh Government programme provides computing-based outreach sessions for young people aged 8-19. The outreach programme supports the new computer science curriculum in Welsh schools and raising the profile of the subject at university level.

Our students deliver Technocamps workshops using introductory programming languages such as Logo, Python, Scratch, and Greenfoot, providing a gentle and fun introduction to computer science.

Institute of Coding

Cardiff University is a partner in the UK-wide Institute of Coding led by the University of Bath. The Institute of Coding has been set up by the UK Government to promote digital skills and digital careers and Cardiff University is one of two Welsh universities involved in the group. A number of the aims of the Institute of Coding in Wales are linked with the Technocamps initiative and the STEM Ambassador scheme.

School support

Contribute to activities within the School by joining our Student Ambassador Scheme. As an ambassador, you can assist at our weekend Computing Club for children aged 8-15, Teacher CPD workshops, University Open Days and College events such as the STEM Conference and STEM Live events. We provide you with all the training, advice and support you need to join the scheme at the start of your studies with us, usually during induction week.

Year in industry and year of study abroad options

Develop your employability skills with a salaried year working in industry, or learn while you travel and experience a different country by studying at one of our partner universities abroad.





“Don't just take our word for it . . .”

I would definitely recommend the Year in Industry to any student thinking about it. I worked as a Software Developer for a company based in London and I loved it. The placement gave me the opportunity to blossom and become a developer.

Viktoria Idakieva,
graduated from BSc Computer Science
with a Year in Industry

Year in industry

In a competitive graduate job market, industry experience can help you gain extra skills and experience to make you stand out from the crowd. It could help you to secure a permanent role after you graduate, as well as providing real-world context to support your studies. If you're not sure what career path to follow, it's a great opportunity for you to figure out what you want to do. It might help you make those all-important decisions about your future.

Where can I complete my placement?

We have links with over 300 institutions and can provide you with the opportunity to embark on placements across the world. Our students have completed exciting placements at organisations such as Admiral, Airbus, CERN, GSK, Hewlett Packard, Lloyds Bank, Red Bull Racing, and many more.

How does it work?

Your placement will last typically between 10-12 months and takes place in year three.

Our School has a dedicated Placement Officer that will help you find and apply for suitable placement opportunities. You will also have close contact with our placement coordinators, through email and face-to-face visits, to discuss your progress and help you get the most out of the year. We will encourage you to reflect on your experiences by posting weekly entries to an online journal.

You will return to Cardiff following the successful completion of your work placement at the start of the autumn semester ready for your final year of studies.

A Year in Industry will extend the three-year BSc degree programmes to four years and the four-year MSci degree programme to five years. You don't need to commit to a placement until the start of your second year, so there's plenty of time to add this on at a later date if you're not sure what you would like to do yet.

Sadly, we can't guarantee that all students will find a placement and the responsibility for securing a placement lies with you.

Find out more about our placement options on our website at:
www.cardiff.ac.uk/computer-science/courses/undergraduate/year-abroad

Summer placements

Short-term placements are a key component of all of our degree programmes. We will encourage you to complete these during the summer months to help you gain valuable experience in the workplace. Many of our summer placements are paid positions, and you will receive help in securing a suitable post.

Students at the National Software Academy have the option to undertake two summer work placements, between the first and second, and second and final years of the degree programme.

We have a great tradition of being involved with CUROP (Cardiff Undergraduate Research Opportunities Programme), which provides summer placements for Cardiff University undergraduates in the University research environment.

Year of study abroad

Studying abroad as part of your university experience is a great way to broaden your academic knowledge, immerse yourself in another culture, and gain skills that could be valued by employers. An international experience will not only enhance your CV by demonstrating key skills such as communication, flexibility, and collaborative working but can provide you with valuable networking opportunities.

Above all, it's the start of a new adventure. You will experience other cultures and viewpoints, make new friends and share unforgettable experiences during your time abroad. You may also have the chance to embrace a new language.

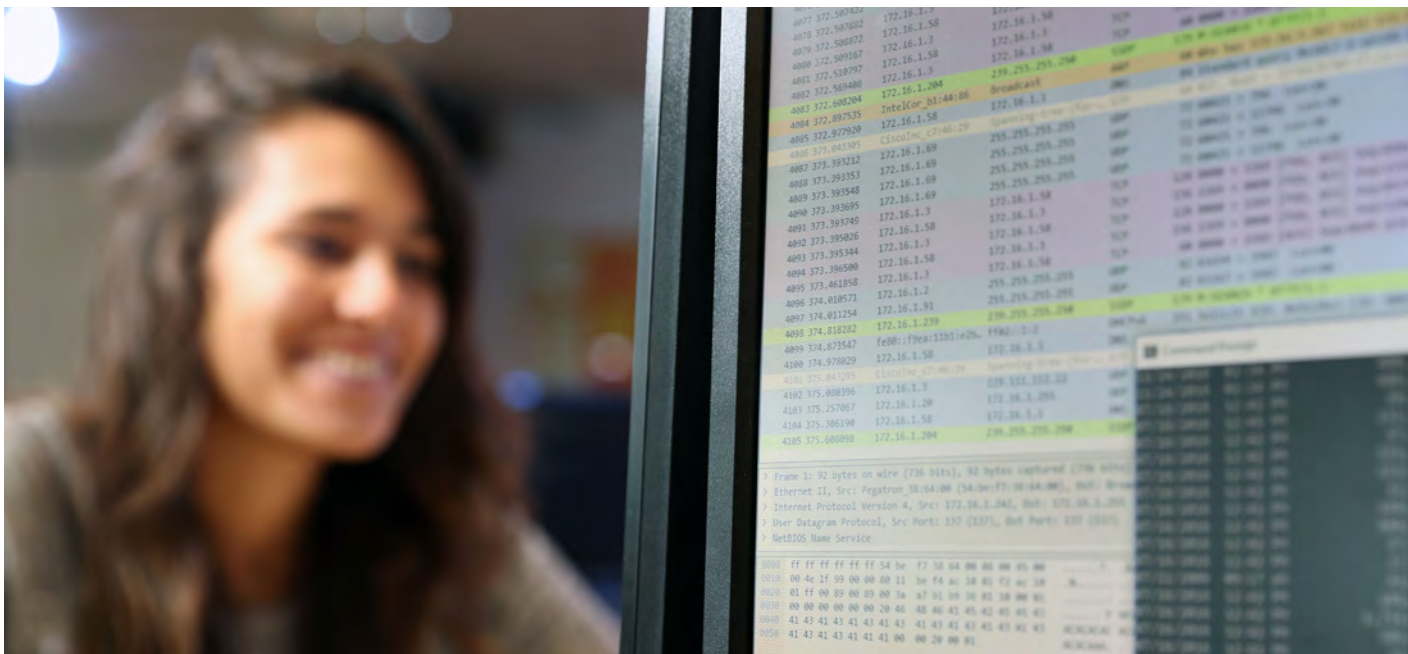
Where can I study?

We have developed numerous partnerships with top universities, which means that you have the opportunity to study in some of the most iconic and inspiring cities in the world.

Destinations include Paris, Berlin, Milan and Barcelona, as well as many other universities further afield in the United States, Canada, Australia and Hong Kong.

Find out more about studying abroad on our website at:
www.cardiff.ac.uk/computer-science/courses/undergraduate/year-abroad

Computer Science or Software Engineering?



Two of the most common degree paths for the computer savvy are Computer Science and Software Engineering, but how do you choose between them?

A simplified way to understand the key differences is to look at the degree type.

Computer Science is a science degree which covers a broad range of principles rather than a single application of these principles. Software Engineering is an engineering degree offering a more singular focus on the design and creation of software products, a focussed sub-set of Computer Science.

Let's take a look at some of the core differences and similarities to help you choose the best degree for you.

What will you learn?

Computer Science concentrates on core concepts and technologies involved in programming a computer. Students will study how data is stored, processed, applied and kept secure by information processing systems. It involves learning programming languages, databases, operating systems, graphics, robotics and other sophisticated technologies as well as briefly exploring

software engineering subjects, such as software development.

A Computer Science graduate is proficient in designing and building software, developing computing solutions and innovating better approaches to addressing computing challenges.

Much of this will also be taught to Software Engineering students, though there will be some difference in emphasis. Software Engineering focuses on designing and building software systems. It teaches you to manage the whole software development life-cycle such as requirements gathering, software architecture, building prototypes, implementation, testing, deployment and maintenance, with an emphasis on agile project management and working to customer requirements.

Software Engineering does involve learning certain core Computer Science concepts and programming, but it does not explore as much in depth as done in the Computer Science course.

What are the key differences between the degree programmes?

If you want the flexibility to build depth or breadth in a variety of topics, our Computer Science courses are flexible. You can choose from a range of optional modules in areas such as security, forensics, graphics, computer vision, artificial intelligence and large-scale database management.

If you're looking for a hands-on practical approach, our Applied Software Engineering degree is centred on developing software solutions to real-world client problems. You will use a systematic approach and apply engineering principles to the entire software development process, from concept to completion. Our Applied Software Engineering graduates have the practical skills and academic knowledge required to become immediately effective in a range of software development and maintenance roles.

If you're still not sure which degree is best for you, please contact our team:

Email: comsc-ug@cardiff.ac.uk

Tel: +44 (0)29 2087 4767

Beginning your career



Our students have an excellent reputation for finding employment after they graduate with **93% of our graduates in employment or further study within six months of graduating.**

Our degrees combine theoretical study and practical projects, helping you to develop subject-specific knowledge and professional skills that are in demand for a wide range of careers.

Career options

IT and technology has a wide range of specialties and potential career options. These include computer architecture, software systems, graphics, artificial intelligence, computer gaming, computational science, software engineering, data science, technology consultant, telecommunications, health data, project management and cyber security.

You could also use your degree towards a career in teaching. The BCS, the Chartered Institute for IT, offer teacher training bursaries.

An undergraduate degree in Computer Science and Informatics might whet your appetite for further study at postgraduate level. We offer a range of master's degrees in Cybersecurity, Artificial Intelligence, Data Science and Analytics and Advanced Computer Science.

Whether your future is in IT or elsewhere, some form of related work experience - as a summer job, placement, or 12-month sandwich year - will certainly enhance your prospects of getting interviews for graduate-level jobs after you finish your degree.

Employability skills

The skills you will have gained are varied and can include: team-work, problem-solving, analytical skills, numeracy, leadership, communication (written and oral), being innovative and creative and receptive to new ideas.

Types of employer

The range of interests and scale of organisations within the IT and technology sector is enormous, with workforces varying in size from small consultancies to large multinationals.

Examples of employers include:

- major consultants who design and operate large systems for major third-party clients, including CGI, Capgemini and Thales
- commercial organisations with large IT set-ups, including ExxonMobil, Ford and IBM
- consultants working on embedded systems e.g. ARM Holdings and HP
- niche system designers typically with interests in health, aviation, rail, transport, finance or defence, including BAE Systems and General Dynamics
- financial sector, including large banks and insurance organisations such as JP Morgan, AXA, Deloitte and PwC

- communications specialists, including Metaswitch, BT and Vodafone
- local consultancies frequently supporting or designing e-systems for local or national organisations, including Target IT, Advance Secure, Tiger Bay, government agencies, as well as the Government Communications Headquarters (GCHQ), QinetiQ (a Ministry of Defence agency) and Her Majesty's Government Communications Centre (HMGCC).

Careers and Employability Services

We offer advice and guidance for our students and graduates on building skills, experience and contacts to improve employability, including:

- Employability masterclasses, covering CV, cover letter and application form support, interview techniques and an introduction to LinkedIn
- One-to-one advice sessions and daily drop-in sessions with qualified careers advisors
- The Cardiff Award Employability Scheme
- Help and advice finding work experience and placements
- Careers fairs and employer-led events where you can network with top graduate employers.

Find out more at:
www.cardiff.ac.uk/careers

Student and Alumni stories

Not long ago they were in the same position as you; about to embark on one of the most exciting chapters of their lives at Cardiff University. From top-quality research to robotics engineering, our students go on to do some amazing things.



There is so much potential in the real world for Cardiff University's computing graduates and our former students have an excellent track record of finding their first job or taking their next career steps.

Where are they now

You might meet our alumni completing further education and research at Cardiff and other top universities. Others have gone on to work as Systems Development Engineers, Games Developers, Cyber Security Analysts, CAD Technicians, Data Scientists, Software Developers and Business Analysts at major companies, including:

Airbus Group, Amazon, BBC, BT, Cardiff University, Capgemini, Confused.com, GCHQ, IBM, Lloyds Banking Group, MoD, Morgan Stanley, Sky, South Wales Police, Thomson Reuters

Take a look at what some of our former students are doing now, and what they have to say about their time at Cardiff University.

Hasna Al Jufaili

2018 - BSc Computer Science with Security and Forensics

Why did you choose to study at Cardiff University?

One of my aunts did her bachelors degree in Cardiff in the 1980s, and I could see the good education she gained, and how she applies it in her job; this really inspired me. I also saw how Cardiff is a safe and nice city for an international student to live in. As a 17 year-old-student traveling abroad alone for the first time, Cardiff was the right choice.

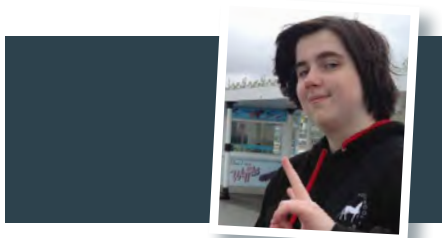
What's your favourite memory of your time as a Cardiff student?

Graduation day - walking in the streets of Cardiff with the graduation gown was like a dream! And then hearing my name called in the ceremony with some loud hand claps and happy cheering from my family and friends is an unforgettable memory and it brings back all the memories of my four years in Cardiff.

Tell us about your career: what's your current role? What's a normal day like?

After two months of graduation, I got a job as a System Developer in Occidental Petroleum Corporation, which is one of the largest oil and gas producer companies in my country Oman and in the world. During my day in the office, I do work on developing web applications, automated reports and some mobile applications, which helps to digitize the oil field and facilitates the operators daily activities. In addition, I work with teams that are located in the main branch in Houston USA and in our branch in Oman.





Caitlin Burns

BSc Computer Science

Why Computer Science at Cardiff?

I actually came to Cardiff University through the UCAS Clearing process and fell in love with the practical approach that the course took. As someone who learns through lab work and examples, it seemed the perfect fit for me.

How did you find the transition from school to University?

It can be quite isolating, as going from an environment where you know everyone and you've grown up with those around you, to a new city with new people, can be quite daunting. However, the first few weeks were a nice introduction to the university and weren't too taxing, giving students time to explore the city, attend socials and make friends, alongside the degree. Within the first day, we were given the information of Student Support, Advice and other welfare services available to us, both within the School of Computer Science and the university as a whole.

Are you involved in any extracurricular activities?

I'm Production Managing a show for the University's drama society, Act One; working as a STEM Ambassador in my spare time and running the occasional radio show for the University's radio station - Xpress. I'm also heavily involved in the LGBT+ community at the University, helping run campaigns and events to spread awareness.

What do you enjoy most about your course?

I enjoy the lab sessions the most. Being able to actively program, build and test different systems is always a joy, especially when you have others around you to give assistance if needed.

What piece of advice would you give anybody considering applying to study for a degree at the School?

Make sure you can juggle effectively. Computer science can be a lot to handle, but you are more than capable of it, as long as you can work independently outside of timetabled hours.



Lauren Heymer

BSc Applied Software Engineering

Why Applied Software Engineering at Cardiff?

I chose ASE because I thought I would enjoy it and that it would put me in a strong place to get a job once I graduate. I've not been disappointed. Getting industry experience on the course with client projects really helped me when applying for summer internships. Both of my internships were with companies I met at a networking event hosted by the National Software Academy. My last internship developed into a graduate position.

How did you find the transition from school to University?

It took time to adjust to producing work at a higher standard, but lecturers were greatly supportive. I appreciate all the time they gave. Support was on hand in practical sessions and you could always approach lecturers for advice and feedback outside of class.

Are you involved in any extracurricular activities?

I was a student mentor in my second year. Every year the head of the scheme gives a talk to all cohorts explaining how students can apply.

What do you enjoy most about your course? I enjoy the practical assessments. Most of them have been really interesting to work on and they're a great way to truly learn as opposed to exams.

What piece of advice would you give anybody considering applying to study for a degree at the School?

My advice is pick something you think you will enjoy.



Oliver Storey-Young

BSc Computer Science (Year in Industry)

Why Computer Science at Cardiff?

Coming into university I didn't know a lot about Cardiff at all, but after visiting on an open day I felt really welcomed and liked the atmosphere and facilities that were available to me.

How did you find the transition from school to University?

The transition wasn't too bad for me as I had already become quite independent and got used to sorting things out myself. The first module which all students are on together was a great way to ease everyone into the actual subject and the learning styles that would be needed throughout the rest of the degree. Meeting my personal tutor and student mentor also made me feel even more welcome.

Are you involved in any extracurricular activities?

The main society that I am a part of is the Snowsports society after attending the Give it a Go session. Very quickly I became well known and have since always been a core member of their club. Give it a go/Freshers Fair is a great way to find new clubs to join. I've also participated in some more academic or Computer science related activities such as Student Mentor, Placement Pal and a Gold STEM Ambassador. I am also studying Beginner Spanish.

What do you enjoy most about your course?

I mostly enjoy learning about new technologies available and their real-world applications. I like the hands-on side of the course and labs are a great way to learn.

What piece of advice would you give anybody considering applying to study for a degree at the School?

Get stuck in, Cardiff is a great city and the University offers so much more outside of the classroom. Make the most of freshers, meet new people and try new things. The friends you make at University will likely stick with you forever.

Our degree programmes



It's great being able to work on real projects that may actually be used in industry after we have finished with them. I would say that having the experience of working with industry is definitely going to help when I graduate.

James Ackland, BSc Applied Software Engineering

Applied Software Engineering **BSc (Hons)**

UCAS Code: **4JVD** Duration: **3 years**

Based at the National Software Academy in Newport, this is a hands-on course for those who want to learn how software is built and maintained through real-world development projects.

We work closely with large organisations such as Admiral, Gcell, and Acorn to offer project-focused courses exposing you to the latest commercial tools and techniques.

During your time here, you will learn through case studies, networking events, guest presentations, and real-world projects, and leave the Academy with the qualifications and professional skills you need to find your job as a software engineer.

You will get many opportunities to meet and work with practicing professionals from a wide range of organisations. Our previous students have managed to secure work placements, and even graduate jobs from relationships they have built during their studies.

Our purpose-built home in Newport feels less like a lecture theatre and more like a start-up tech company. Beginning with a morning commute to work, you will travel to the Academy via a 12 minute, fully-funded train ride from Cardiff. The Academy is right next to Newport train station. You will belong to the School of Computer Science and Informatics and can enjoy access to the School's extensive range of facilities and student support services in Cardiff.

About the course

Year one

You will begin the course by learning to think like a programmer. This involves designing web applications and working with databases. You will begin to code with languages such as Java and Python using industry-standard tools and best-practices, as well as applying the principles of agile development whilst developing your communication and project management skills.

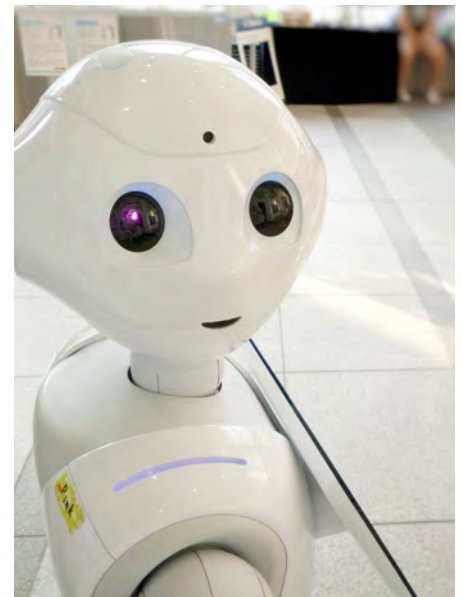
Year two

In year two, you will get to work on larger, more complex and technically difficult projects, expanding your knowledge in areas such as performance and scalability, security, and DevOps. This will be necessary to support the scale, resilience and security needs of your cloud-based enterprise solutions. You will also develop and deploy mobile and web applications according to the needs of customers. At this point, you are expected to be leading project meetings to plan and manage development work for a team and regularly holding meetings with customers.

Year three

In the final year, you will learn about emerging trends, and use them to develop a product with an appreciation of the latest frameworks, languages, and tools. You may collaborate with other development teams and will lead customer meetings as part of a large team project. This year builds upon the experiences of years one and two and brings together all of the elements you will need in order to think and work as a commercial software engineer.

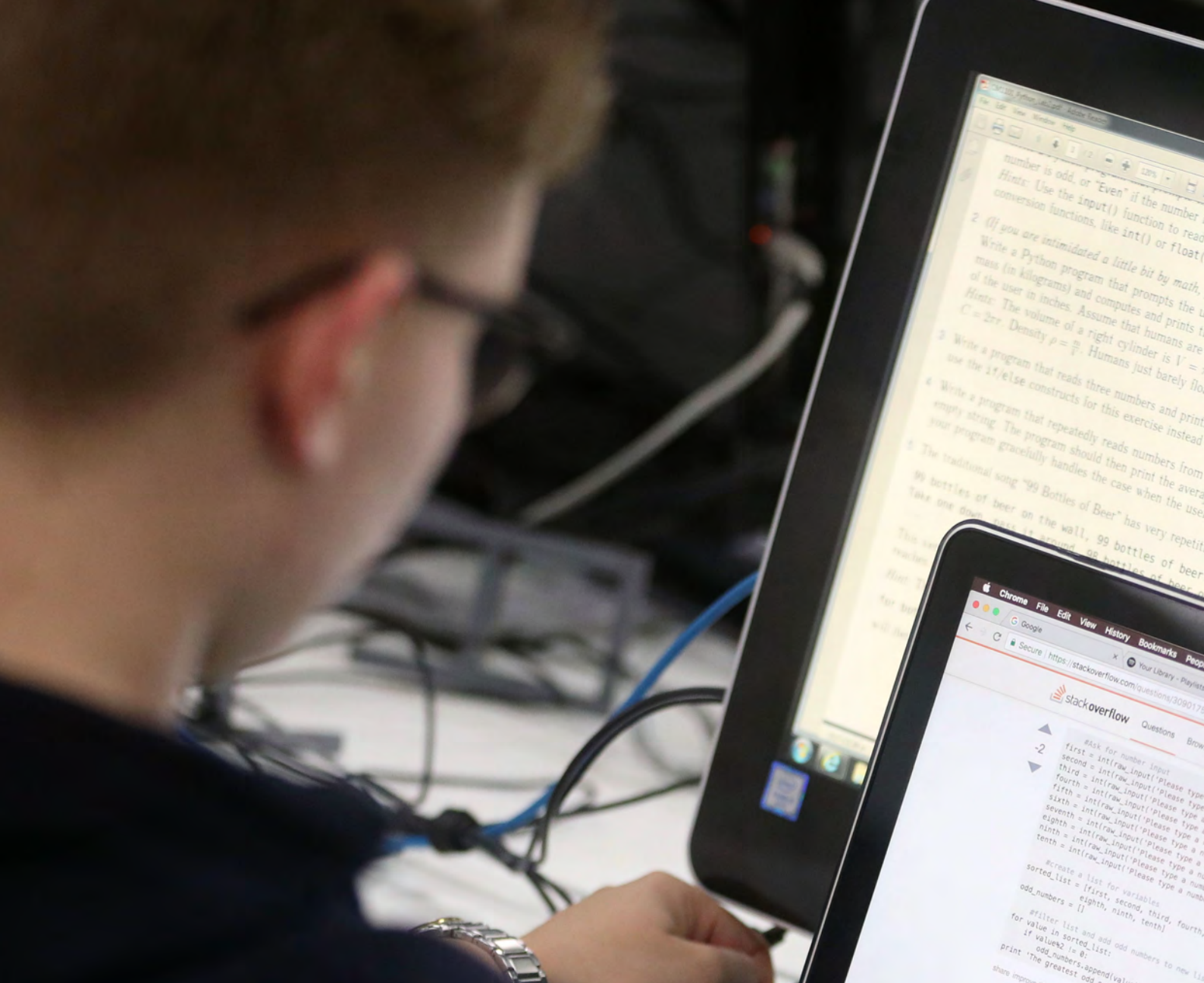
The most up-to-date module information can be found on our website at: www.cardiff.ac.uk/courses



“Don't just take our word for it . . .”

Over my years in IT management I've found that we need to spend a significant amount of time getting graduates up to speed with what it's like working in an office. On a course like this, you get more experience of what it's like to actually work in an IT environment.

Matt Wintle, Head of Change, Admiral



The course is really varied and I feel like I've gained a lot of new skills that have helped me to improve the way I approach my projects. I've made a lot of contacts on the course that I hope will lead to a job opportunity when I graduate. **James Grant**, Computer Science with a Year in Industry

Computer Science

BSc (Hons) UCAS Code: **G400** Duration: **3 years**

MSci (Hons) UCAS Code: **G404** Duration: **4 years**

This course is taught as a broad subject, where you cover theory as well as practicing the transferable technical, analytical and professional skills required by employers.

Computer Science is an exciting and dynamic field, full of open problems and opportunities for creative discovery and invention that touch almost all areas of life. It is about understanding computer systems and networks and how they work at a deeper level, mostly from a theoretical, mathematical and applied perspective. Because computers solve problems to serve people, there is also a significant human element to the subject.

The course covers a mixture of core concepts and evolving, technology-based subject matter. Not only will you develop the technical, analytical and professional skills that graduate employers are looking for, you will also be able to analyse problems objectively to develop appropriate computational solutions.

Industry projects and placements are a key component of this degree and will help you gain valuable experience in the workplace. Plus, you also have the opportunity to complete a year in industry or a year abroad.

About the Course

Our Computer Science courses prepare you for entry into relevant professions and are also a solid base for pursuing a research career. You don't need to have any prior knowledge or experience of Computer Science to complete this course, however A Level Mathematics is required for the four-year MSci degree.

Year one Computational Thinking

The first year at the School of Computer Science and Informatics welcomes students with a "Computational Thinking" module that runs for the first four weeks of Year One.

This module aims to excite and enthuse students in the field of IT, information systems, software engineering, and computer science. It provides an introduction to some of the fundamentals of computing, explores applications of computing, and develops the relevant intellectual and learning skills. The module addresses this from both a theoretical and a practical viewpoint, and helps students coming from a variety of backgrounds to master the most fundamental intellectual skills they will require in the remainder of the degree programme.

While we assume only minimal prior background in computer science, "Computational Thinking" convincingly demonstrates that even complete beginners can be taught to program computers in a matter of weeks: the highlight of the module is a sizeable programming project (usually, a computer game) on which the students work in teams, often with impressive results.

Further modules will introduce programming algorithms using languages such as Python and Java, an understanding of internet and web technologies, computer architecture and operating systems, software engineering principles and mathematics for computer science.

Year two

Building on the foundations of the first year, the modules taught in the second year expand your understanding, skills, and experience by introducing more advanced topics in the School's main research areas. Some choice is also introduced through optional modules.

The structure and processing of data are further explored and simple algorithms are expanded into applications that are able to communicate via networks.

You will apply the skills you've developed so far during a team project where you will design and implement a software system.

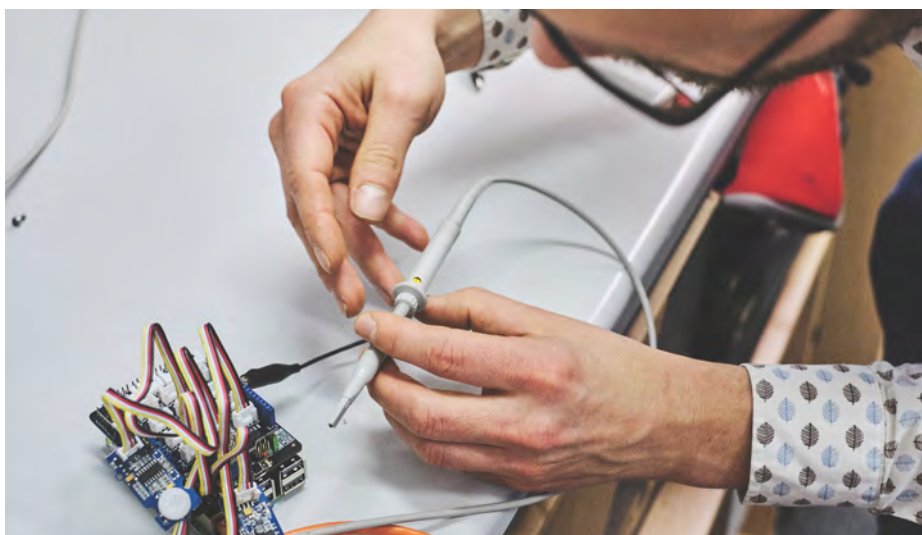
Year three

You will focus on emerging technologies and advanced topics which are informed by the School's research. There are a number of optional modules to choose from depending on your specific interests. Contemporary topics include Cybersecurity, Artificial Intelligence, and Computer Graphics. You will complete an individual project under staff supervision, driven by your interests.

Year four (MSci students only)

If you opt for the four-year MSci course, you will complete a major team project developing new research and technology under the supervision of one of our academic staff. This will compound all the knowledge you have learnt on the course, and help you to develop crucial soft skills.

The most up-to-date module information can be found on our website at:
www.cardiff.ac.uk/courses





“The course is challenging but it helps you to improve as a professional. Through extracurricular activities and projects I have improved my team working and presentation skills.”

Iryna Bernyk, Computer Science with Security and Forensics

Computer Science with Security and Forensics

BSc (Hons) UCAS Code: **G4F4** Duration: **3 years**



This course provides a mix of business context with the core security, trust and privacy issues that challenge the IT sector.

Cardiff University has been named as an Academic Centre of Excellence in Cyber Security Research by the UK's National Cyber Security Centre (NCSC), becoming the first institution in Wales to be given this status.

In an increasingly networked world with rising computer-based crime, cyber risk is firmly at the top of global business agendas. The worldwide shortage of skilled cybersecurity and forensics practitioners places graduates who understand the technologies and practices that underpin secure systems in high demand.

Our broad and inspiring curriculum will expand your understanding of Computer Science and provide the ideal preparation for specialist employment or further study in computer security/forensics.

Through a mixture of core concepts and evolving technology-based subject matter, you will cultivate the technical, analytical and professional skills that graduate employers are looking for.

Industry projects and placements are a key component of this degree and will help you gain valuable experience in the workplace. Plus, you also have the opportunity to complete a Year in Industry or a Year Abroad.

You will have access to our Cybersecurity and Digital Forensics Laboratory, where you can investigate incidents and explore the key security threats facing today's professionals through experiments with attacks in real-world scenarios.

About the course

Our Computer Science with Security and Forensics course will prepare you for entry into relevant professions. It also provides a solid base for pursuing a research career.

You don't need to have any prior knowledge or experience of Computer Science to complete this course.

Using current-generation tools and techniques, you will develop, maintain and monitor secure computer systems. In the third-year, you will have the opportunity to explore topics such as network security, systems hardening, computer crime, forensic methods, and evidence collection.

The most up-to-date module information can be found on our website at: www.cardiff.ac.uk/courses

Teaching, learning and development



At Cardiff, we aim to provide a supportive learning experience that gives you a chance to explore your academic curiosity in a fascinating subject.

You will learn through a wide variety of activities including lectures, small-group tutorials, practical computer labs, and self-directed study.

Our Computer Science students have around twenty-five formal contact hours a week during year one. There will be fewer contact hours during the latter stages of your degree as you take control of your own learning experience.

Our Applied Software Engineering students have fifteen hours of contact time a week for the duration of the degree.

Teaching is organised in modules, split over two semesters (Autumn: 14 weeks, Spring: 17 weeks); in each, there are 11 teaching weeks, followed by weeks dedicated to revision, some project work, and exams.

Lectures form the backbone of your studies in the first year when you will be taking up to six modules at any given time. Each module will typically involve around three hours of study per week, combining a mix of formal lectures, tutorials or computer labs.

Personal tutors and study support

You will be allocated a personal tutor to help and advise you during your time at university. Your tutor is one of your first ports of call in the school if you have any problems or questions. They can offer help, encouragement, and feedback on your performance on the course.

As well as receiving support from your personal tutor we also run a Student Mentoring Scheme where first years can get advice and support from other students.

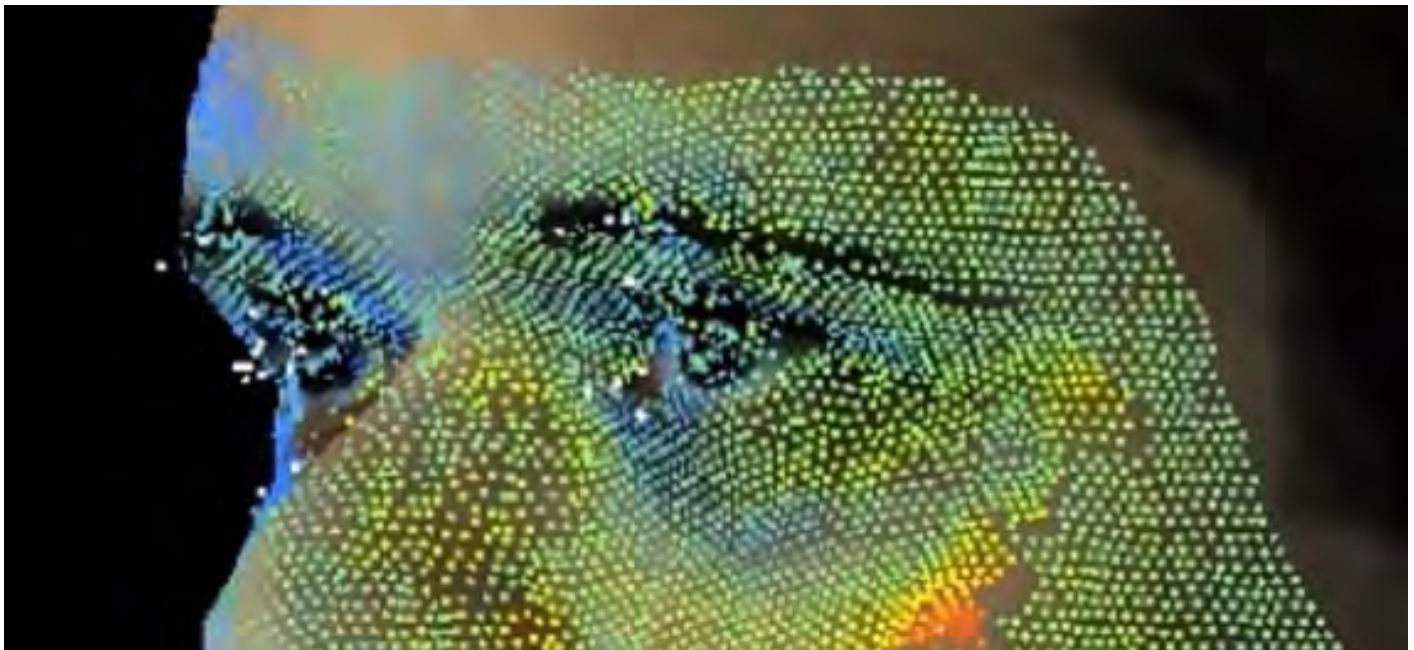
Plus, your lecturers are always on hand to help with subject-specific queries and will support your learning through example classes, tutorials and help sessions.

How will I be assessed?

Your progress in each module will be assessed during and/or at the end of the semester.

There are a variety of modes of assessment, including traditional examinations, practical coursework and other activities, such as project demonstrations, appropriate to the subject matter and level. The most significant open assessment which you will undertake is your final year project which contributes significantly towards your final mark.

Research



Our longstanding, strong and dynamic research culture has given rise to our international reputation for world-class research.

Our research is organised into three groups: complex systems, data and knowledge engineering, and visual computing.

Complex Systems

Research in this area explores cybersecurity, social and mobile computing, parallel and distributed systems, multi-criteria optimisation, mathematical modelling, and human factors.

Data and Knowledge Engineering

Our work in this field specialises primarily in knowledge representation and reasoning, machine learning and data mining, and mobile and spatial informatics.

Visual Computing

This research area spans a wide range of topics in the fields of computer vision, computer graphics, geometric computing, and both image and video processing. A significant theme in our work considers the input, description, and editing of solids, surfaces and curves represented analytically as CAD models and as meshes.

Priority areas

Significant investment has gone into the creation of seven new research priority areas to focus on emerging trends within our rapidly-evolving discipline.

These priority areas have been selected to complement our three existing research groups, aiming to provide additional vitality and agility in which we can respond to emerging trends.

- Data privacy and cybersecurity
- Distributed and parallel systems
- Human factors technology
- Knowledge representation and reasoning
- Social computing
- Text and data mining
- Quantum technologies and engineering

Research impact

Our knowledge and expertise are being applied in innovative ways to drive forward the research agenda and help our industrial and public sector partners solve complex real-world problems.

Our work is having an impact on a number of diverse areas, such as:

- Cybersecurity (security, trust, and privacy issues)
- Healthcare (patient record systems and information visualisation)
- The environment (biodiversity management and geospatial information systems)
- Telecommunications (communications network design and virtual organisations)
- Engineering design (especially reverse engineering of solid shape)
- High-performance and grid computing (distributed processing, knowledge management, and immersive visualisation).

Collaboration

Much of our research is interdisciplinary, in collaboration with Schools at Cardiff and other top universities, across the full spectrum of engineering and physical sciences, biomedical and life sciences, social sciences, arts, and humanities.

Our collaborative partnerships include the Human Factors Technology Centre, and the Wales Institute of Mathematical and Computational Sciences (WIMCS).

A capital city



Cardiff is a compact city with an enormous character. Nestled between the rugged coastline and breathtaking mountainous scenery of Wales, the country's capital is a cornucopia of culture, marrying historical delights with cosmopolitan amenities. Providing an endless array of activities, one stroll through its cobbled streets can see you learn about the rich tapestry of Cardiff's past at Cardiff Castle before soaking in the atmosphere as the crowds spill from the Principality Stadium after one of the many sporting events it holds year round. The vibrant and independent culinary scene is the heartbeat of the city. With something

to please every palate, you can enjoy fine dining, plant-based treats and exotic cuisines from almost every corner of the globe, without forgetting Welsh cakes for dessert! Wales is the land of song, and Cardiff certainly contributes heftily to this legacy. This city is built with music running through its veins, from the oldest record store in the world, Spillers Records, which is tucked away in Morgan Arcade, to more contemporary and intimate venues which host some of the world's most exciting new musical talent. Though your Cardiff bucket list may be bursting at the seams, be sure to make a little room for our National Museum which is a place of

true wonder, while the iconic Wales Millennium Centre in the idyllic setting of Cardiff Bay is simply not to be missed. Bustling with personality, Cardiff is a city made for students, offering an endless string of entertainment opportunities while remaining inexpensive and easy to navigate. The modern shopping centres, aesthetic arcades, luscious green parks and thriving nightlife are a huge draw for living in Cardiff, though you'll always find your way back to our Students' Union, which is the true home of the student scene in the city.

“The official capital of Wales only since 1955, the buoyant city of Cardiff (Caerdydd) has, since the turn of the millennium, witnessed a remarkable evolution from a large town to a truly international city, with massive developments in the centre as well as on the rejuvenated waterfront. With a reputation as a party town, allied to lots of top-class sport and cultural attractions, it is one of the UK's most enticing destinations.”

Rough Guide 2020

A leading university

Part of the
**RUSSELL
GROUP**



“Cardiff University is highly rated on a local and global scale.”

The Telegraph, 2018

Our students learn from leading researchers in over 300 courses across the University. As Wales’ only Russell Group institution, we have gained an international reputation for excellence in teaching and research, which is built from our history of achievement since 1883.

Cardiff University becomes home for approximately 5,500 new undergraduate students every year. While competition for places is strong, we pride ourselves on being an inclusive university, welcoming applications from everyone who wishes to study with us.

We are a global university with over 7,900 international students from more than 100 countries and open our doors to all applications, irrespective of background.

Facilities and development

Committed to investing in our services, Cardiff University is home to new and well-equipped laboratories, lecture theatres, libraries and

computing facilities to name a few, with more exciting developments continuously underway.

We take our environmental, safety and security responsibilities seriously, embracing our comprehensive Energy, Water and Waste Policy, which is already making great savings in energy consumption and helping us to do our bit to tackle climate change.

Global Opportunities

We are partnered with over 300 leading institutions across the world, and our Global Opportunities team will help you to gain valuable international experience, through study, work or volunteering.

Supporting you

Our student support and wellbeing centres deliver a substantial range of services available to all students that are free, impartial, non-judgemental and confidential, aimed to help you make the most of student life and support you during your study.

We are also rated as one of the best universities for supporting LGBT+ students and are proud to be ranked highly in the Stonewall Workplace Equality Index.



Virtual campus tour

Discover more about the University and the city of Cardiff through our interactive online tour at:

virtualltour.cardiff.ac.uk

Living in Cardiff



“Cardiff has one of the biggest, best and most active students’ unions in the UK, with high quality facilities including Y Plas, a 2,150 capacity nightclub; and the Great Hall, a major concert venue.”

Complete University Guide, 2019



Cardiff is the perfect place to be a student. It mirrors the hive of activity a big city offers, but in an intimate and compact setting with endless character. Drink in the atmosphere, soak up the culture and get stuck into the host of activities available in our city; your new home.

A guarantee of accommodation

If you accept your offer of a place at Cardiff on a firm basis, you are guaranteed a single occupancy place in University accommodation during your first year, living with other first year undergraduate students.

The residential dates for your particular accommodation will be confirmed in your Offer of Residence.

Residence Life

While staying in Cardiff student accommodation, you will have access to the incredible service provided by the Residence Life Team, who work tirelessly to enhance your student experience.

Working in partnership with Student Support and Wellbeing, the Residences Office and the Students’ Union, Residence Life will welcome you to Cardiff and help you to make a smooth transition into University.

They also help foster a strong sense of community through social events, and cultural activities, as well as practical support too.

Students’ Union

Our Students’ Union is at the heart of the Cardiff student experience. It’s a student-led and independent part of the University, dedicated to making your time with us the best it can be.

Built on the foundation of inclusion, diversity, personal development and friendship, the Students’ Union runs a range of activities and services to help enhance your Cardiff University experience.

These include advice, training, skills development, entertainment, volunteering opportunities and employment throughout your time at Cardiff and to prepare you for a career after University.

Find out more . . .

Accommodation

For further information please visit our website: www.cardiff.ac.uk/residences

You can also watch our residences film online at: www.youtube.com/watch?v=hxZX-dYlFB8

Students’ Union

 facebook.com/cardiffstudents

 snapchat.com/add/cardiffstudents

 instagram.com/cardiffstudents

 [@cardiffstudents](https://twitter.com/cardiffstudents)

 www.youtube.com/cardiffstudents

How to start your journey with us



UCAS Codes

BSc Applied Software Engineering:	4JVD
BSc Computer Science:	G400
BSc Computer Science with Year in Industry:	G401
BSc Computer Science with a Year of Study Abroad:	126V
BSc Computer Science with Security and Forensics:	G4F4
BSc Computer Science with Security and Forensics with Year in Industry:	GKF4
BSc Computer Science with Security and Forensics with a Year of Study Abroad:	125V
MSci Computer Science:	G404
MSci Computer Science with Year in Industry:	G402
MSci Computer Science with a Year of Study Abroad:	G403

To be considered for entry onto one of our degree programmes you should apply online via the UCAS website using the 'UCAS Apply' facility. To use this facility you need to log onto: www.ucas.ac.uk/apply

The website will provide you with information on how to apply and explains the UCAS procedure.

Entry requirements

BSc Computer Science, BSc Applied Software Engineering

Typical A-level Offer: ABB - BBB

Typical WBQ Offer: WBQ will usually be accepted as an equivalent to one A-level.

Typical BTEC (RQF) Offer: DDM - DMM in IT (or ICT), Computing and Engineering for Applied Software Engineering (BSc), Computer Science (BSc) and Computer Science with Security and Forensics (BSc). DD-DM in IT (or ICT), Computing and Engineering plus a Maths A-Level for all Year of Study Abroad options.

Typical Int Bacc Offer: 32-30 points

Other: Applications from those offering alternative qualifications are welcome. Please see detailed admissions and selection criteria for more information.

All with a Year of Study Abroad options require A-level Mathematics.

MSci Computer Science

Typical A-level Offer: AAB-ABB including A Level Mathematics.

Typical WBQ Offer: WBQ will usually be accepted as an equivalent to one A-level.

Typical BTEC (RQF) Offer: DDM - DMM in IT (or ICT), Computing and Engineering for Applied Software Engineering (BSc), Computer Science (BSc) and Computer Science with Security and Forensics (BSc). DD-DM in IT

(or ICT), Computing and Engineering plus a Maths A-Level for Computer Science (MSci) and all Year of Study Abroad options.

Typical Int Bacc Offer: 34-32 with 5 in Maths HL.

Other: Applications from those offering alternative qualifications are welcome. Please see detailed admissions and selection criteria for more information.

Please note: General Studies and Critical Thinking are not accepted for entry.

Other

Applications from those offering alternative equivalent/overseas qualifications are welcome, as are those who may have other relevant work/life experience.

Specific subjects

A-level General Studies is excluded.

GCSE: No specific requirements other than normally at least a grade C in English Language and a grade B in Mathematics.

Grade C in Mathematics required for BSc Applied Software Engineering.

Applications information

Typical intake: 215

The typical number of applications: 1200

Equal opportunities

Cardiff University is committed to promoting equality and diversity in all of its practices and activities, including those relating to student

Applications *continued*



recruitment, selection, and admission. The University aims to establish an inclusive culture which welcomes and ensures equality of opportunity for applicants of all ages, ethnicities, disabilities, family structures, genders, nationalities, sexual orientations, races, religious or other beliefs, and socio-economic backgrounds. This commitment forms part of the Equality and Diversity Policy which is available at: www.cardiff.ac.uk/public-information/equality-and-diversity

Applicants with Disabilities/ Specific Needs

All offers to study at Cardiff University are made solely on the basis of academic merit. Where applicants have specific requirements that relate to a disability or medical condition, they are encouraged to discuss these with relevant staff in order that appropriate arrangements can be made to ensure the University provides an accessible environment. Specifically, applicants are invited to contact the Disability Adviser who can provide information about the applications procedure, course delivery and access to the physical environment.

Where appropriate, informal visits can be arranged in which applicants can view

accommodation and meet the academic staff. The Disability Adviser can be contacted at:

Student Support Centre
50 Park Place, Cardiff CF10 3AT
Tel/Minicom: **+44 (0)29 2087 4844**
Email: studentsupport@cardiff.ac.uk

Deferred entry

The School has no objection to the possibility of deferred entry and the admissions tutor would be happy to discuss this further with you. Your application is made through UCAS in the usual way, although the UCAS application must show the deferred year of entry.

Admissions contacts

For information on applying and enrolling on our programmes, please contact:
Dr. James Osborne,
School of Computer Science and Informatics
Cardiff University, Queen's Buildings,
5 The Parade, Roath, Cardiff CF24 3AA
Tel: **029 2087 4767**
Email: comsc-ug@cardiff.ac.uk
Web: www.cardiff.ac.uk/computer-science

International admissions:

Email: pse-international@cardiff.ac.uk

Tuition fees and financial assistance

The University charges an annual fee which covers all tuition fees, registration, and examinations, other than the re-taking of examinations by students not currently registered. Please note charges for accommodation in University Residences are additional.

Please see the following website for more information: www.cardiff.ac.uk/fees

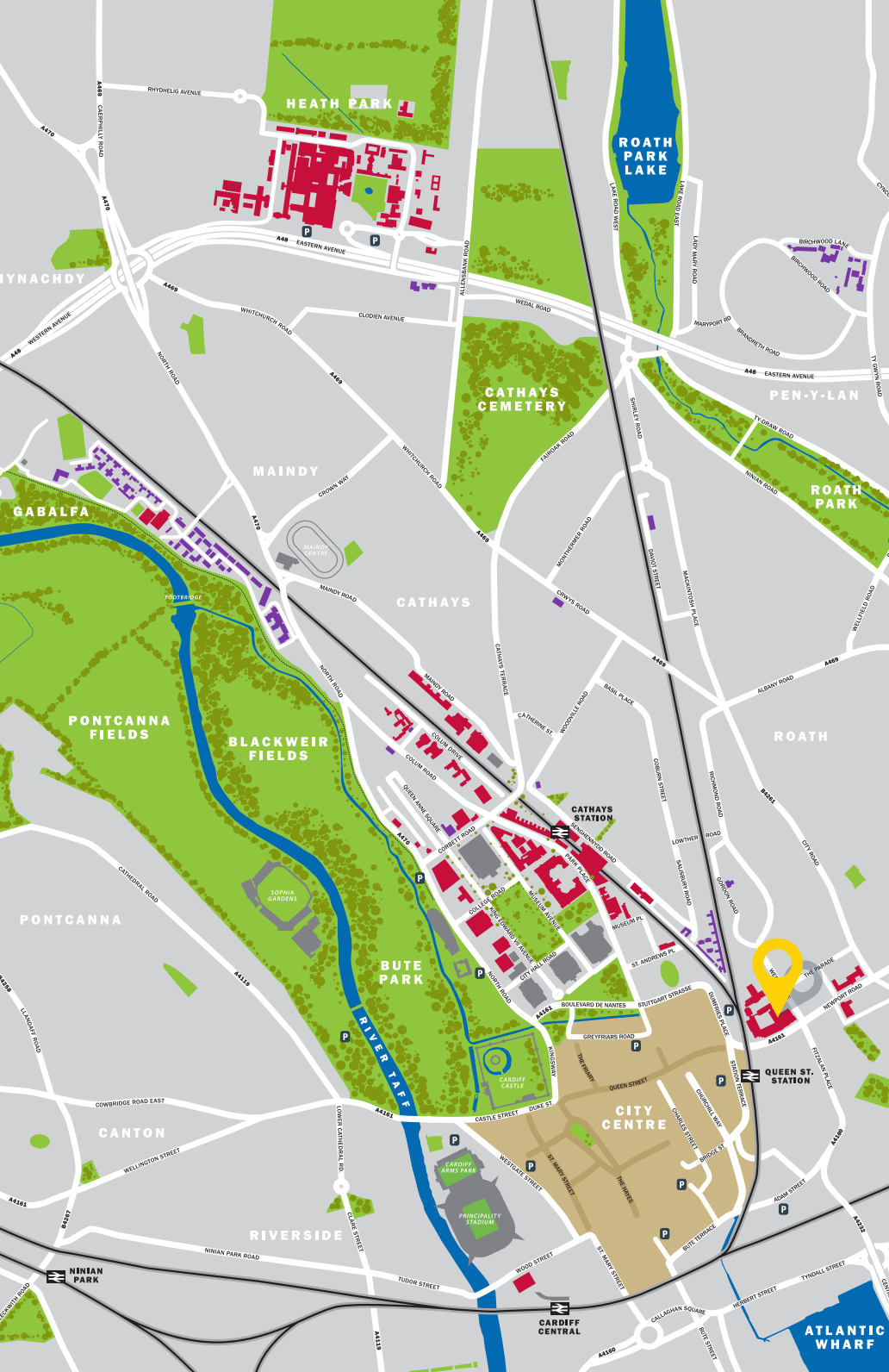
Scholarships and Bursaries

For more information please visit the following website: www.cardiff.ac.uk/scholarships

Open days

University-wide Open Days are held throughout the year and provide the opportunity to visit all Schools in addition to residences, the Students' Union and sports facilities.

For further information please visit our website at: www.cardiff.ac.uk/opendays



Important Legal Information

The contents of this brochure relate to the Entry 2021 admissions cycle and are correct at the time of going to press in June 2020. However, there is a lengthy period of time between printing this brochure and applications being made to, and processed by us, so please check our website at: www.cardiff.ac.uk before making an application in case there are any changes to the course you are interested in or to other facilities and services described here. Where there is a difference between the contents of this brochure and our website, the contents of the website take precedence and represent the basis on which we intend to deliver our services to you.

Your degree: Students admitted to Cardiff University study for a Cardiff University degree.

This brochure is printed on paper obtained from well managed sources using vegetable-based inks. Both the paper used in the production of this prospectus and the manufacturing process are FSC® certified. The printers are also accredited to ISO14001, the internationally recognised environmental standard.

When you have finished with this brochure it can be recycled, but please consider passing on to a friend or leaving it in your careers library for others to use.




Thank you.

Cardiff University is a registered charity, no. 1136855

How to find the School

The School of Computer Science and Informatics is located alongside the School of Engineering and the School of Physics and Astronomy, in the multi-million pound Queen's Buildings. We are right next to the city's best pubs, shops, cinemas and other amenities.

Key

-  School of Computer Science and Informatics
-  University and NHS buildings
-  Student residences

This prospectus can be made available in alternative formats, including large print (text), Braille and on audio tape/CD.

To request an alternative format please contact Laura Roberts:

Tel: **029 2087 4455**

Email: **RobertsL9@cardiff.ac.uk**

CARDIFF
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To find out more about the School of Computer Science and Informatics please visit our website:
www.cardiff.ac.uk/computer-science
www.cardiff.ac.uk/software-academy

Contact us

Tel: **029 2087 4767**

Email: comsc-ug@cardiff.ac.uk

School of Computer Science and Informatics

Cardiff University
Queen's Buildings, 5 The Parade
Roath, Cardiff CF24 3AA

Stay in touch



CompScienceCU



@CompScienceCU

Student life

Got questions about student life?
Get them answered at:

[www.cardiff.ac.uk/
studentbloggers](http://www.cardiff.ac.uk/studentbloggers)

Want to know more about life at Cardiff University? Our student bloggers are recording their experiences and are happy to answer your questions.

Our student bloggers are real students studying on a range of courses. They are here to answer any questions you have about life at Cardiff University. What's a typical day like? What clubs and societies are there? Is Cardiff's music scene any good? It can be almost anything.

