CARDIFF UNIVERSITY
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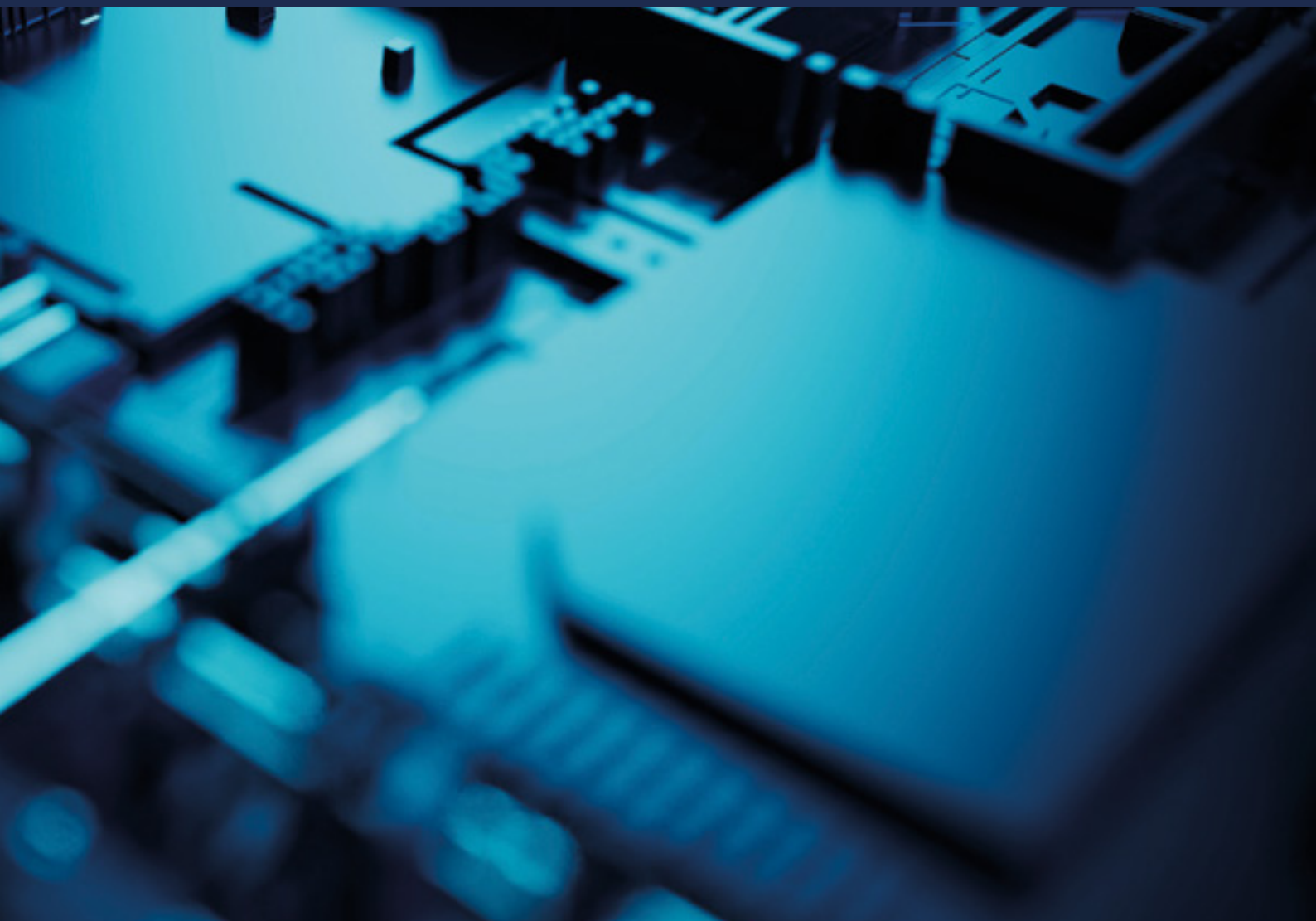
School of **Computer Science and Informatics**

Undergraduate Degree Programmes



www.cardiff.ac.uk/**computer-science**
www.cardiff.ac.uk/**software-academy**

Welcome to our school

94% of our students are in highly skilled employment 15 months after graduating.

Source: HESA Destination of Leavers Survey 2020/21.

> The school has a world-class reputation and innovative courses.
>
> **Rob Hemsley, former student**

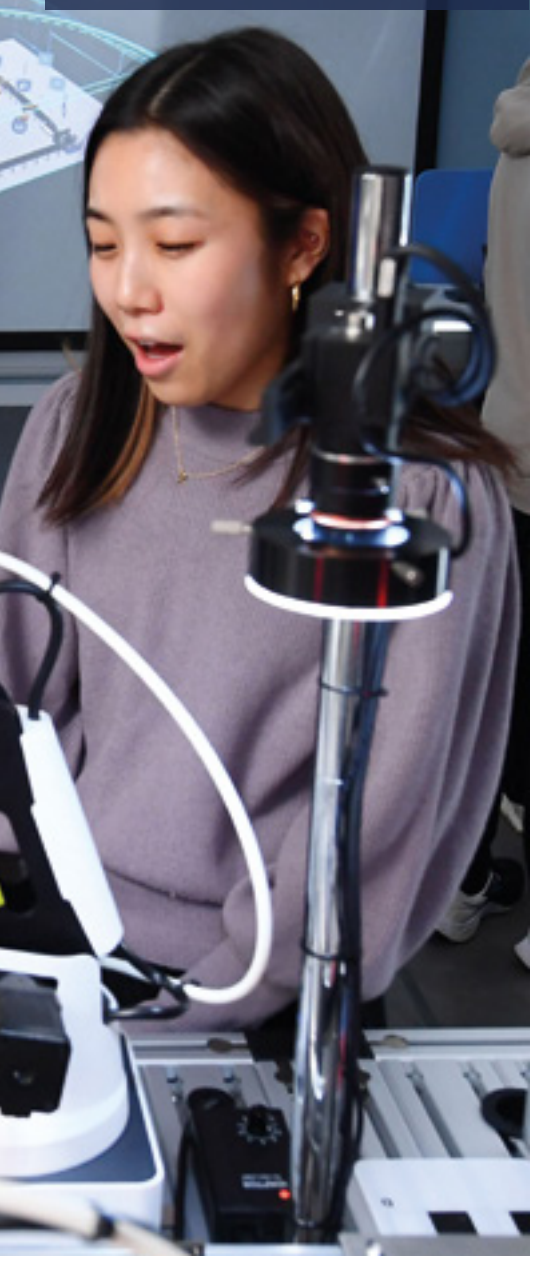
> The course is brilliant and the teaching staff support each of us as individuals.
>
> **Josh Gill, current student**

Over 220 academic and industrial partners across the globe

Choose Cardiff

Accredited by the BCS, The Chartered Institute for IT

Opportunities to work and study abroad



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

As a computer scientist you'll be moving into a dynamic, rapidly growing area that is an integral part of the world we live in today. At Cardiff University we want to give you the skills, confidence and connections to embrace the opportunities it offers.

Our cutting-edge research and range of courses are carefully designed to build your knowledge, skills and employability and are led by 60 specialist computer scientists, technologists and industry experts who are leaders in their field. Their creative, collaborative way of working makes us the first choice for students interested in coding, cyber security, AI, language processing, data science, human centred computing and robotics. Our courses are super flexible, allowing you to adjust direction as you move from a superb first year general grounding into year two. Working with each other and our experts you'll be able to explore what's possible.

What you'll learn here is relevant to every aspect of society. As we see our current graduates moving into careers in engineering, teaching, healthcare, law, management, the arts, finance and more, we are excited to welcome our next group of students at the start of their computer science journey.

Check out a few of our student stories in this brochure and come and meet them and our staff at our next Open Day. They'll be keen to show you around our home in the new Abacws bulding and this beautiful city which we hope you'll make your home.

For now, keep reading and explore your specialist subject and the opportunities available to you during your studies and after you graduate. And when you've had a browse, if you have any questions do get in touch and we'll do everything we can to help.

We're all wishing you every success with your current studies and hope to welcome you to Cardiff soon.

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 to gain valuable work experience as part of your studies. Our computer science degrees have the option to complete a one-year placement during your third year.

Our Applied Software Engineering degree offers opportunities each year to work in teams on projects to develop software solutions for real clients.

You will gain a clearer understanding of what it is really like to work in your chosen field as well as developing key skills such as communication, teamwork, leadership and self-management.

Our strong links with industry also enable us to offer further opportunities to gain work experience through insights and internships. Previous students have gained valuable experience with companies such as Admiral, Airbus, GSK, Hewlett Packard, Lloyds Bank and Red Bull Racing.

Flexible courses

Our courses are highly flexible, and allow you to mould your career as your aspirations develop.

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.

Unbeatable student experience

We offer a supportive, well-equipped environment, and 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.

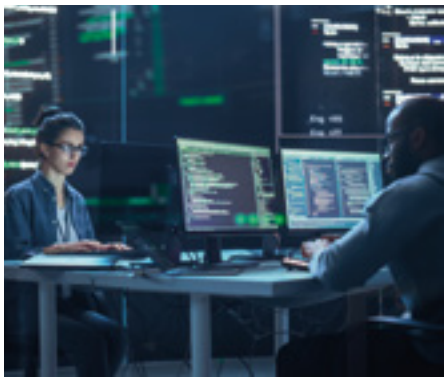
To help you settle into your first year, you will be allocated an academic member of staff as a Personal Tutor and an experienced student as a Student Mentor.

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 2021 Research Excellence Framework (REF), 96% of our submitted research was 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 94% of our graduates are in highly skilled employment 15 months after 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 practice 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 has a new purpose-built home.

Shared with the School of Mathematics, Abacws was 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 also allows:

- 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.

The school is still located close to the Students' Union, student residences, and a short walk from the city centre.

Our Applied Software Engineering BSc is delivered at the National Software Academy which offers students an innovative, start-up atmosphere for study and collaboration. From 2023 this will be based in the Julian Hodge building on the Cardiff campus and just a short walk from Abacws.

The newly refurbished facilities provide students with a study space that mimics a workplace environment and integrates industry working practices.

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

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.

Recent graduate Kara Bennett highlights how she made the most of what we have to 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 did alongside my final year studies and have been offered a full-time job with Admiral Group upon graduating. I have also completed 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 is 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 following the stellar success of the Cardiff Racing team in order to tackle this challenge. The team comprises 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 take autonomous racing challenges by storm with their innovative engineering solutions. Preferring, as always, elegance and simplicity in their designs, Cardiff Autonomous Racing chose an apt motto: to build #SomethingThatWorks.

CyberSoc

Since its pizza-filled launch 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.

@CUCyberSoc

Engagement activities

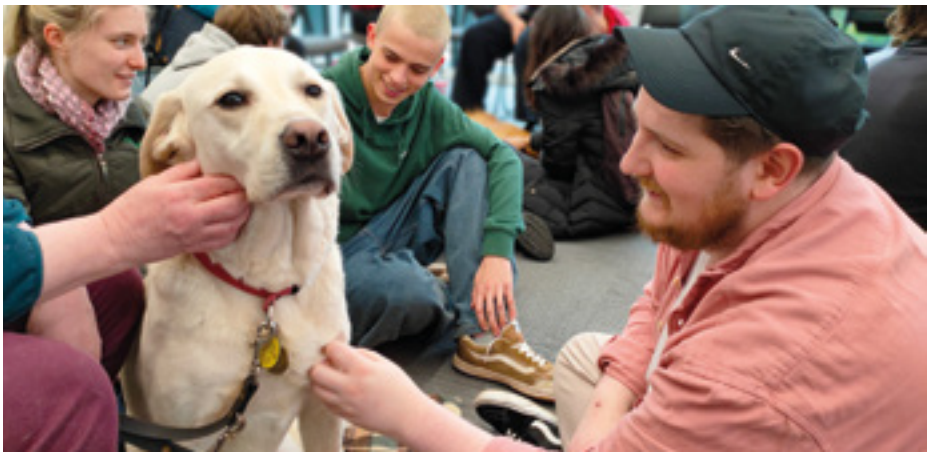
Give a little back to the local community by supporting our events with our industry partners. Your contribution can bring long-lasting benefits to our aspiring communities. It's also an opportunity to strengthen your skills and a nice addition to your CV.

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 Techocamps initiative and the STEM Ambassador scheme.



Year in industry and year abroad

Year in industry and year of study abroad options

Those on a computer science programme can develop their employability skills with a salaried year working in industry or by studying at one of our partner universities abroad. Students pursuing Applied Software Engineering will benefit from work experience embedded throughout their degree.

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 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 typically last 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 your academic supervisor, through email and face-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

Other work experience opportunities

Our strong links with industry partners offers opportunities for students to gain relevant work experience outside of the degree programme through unpaid short work experience insights, paid summer internships and part-time positions.

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 CUSEIP (Cardiff University Education Innovation Projects) and CUROP (Cardiff Undergraduate Research Opportunities Programme), which provides summer placements for Cardiff University undergraduates in a university research environment.

Year of study abroad

Available to those on the Computer Science and Computer Science with Security and Forensics programmes, 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. Partnership agreements are renewed on an annual basis, so destinations may change year-to-year.

Find out more about studying abroad and the most up to date destinations on our website at:
www.cardiff.ac.uk/computer-science

Find out more

Computer science or applied software engineering?

Two of the most common degree paths for the computer savvy are computer science and applied 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. Applied 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.

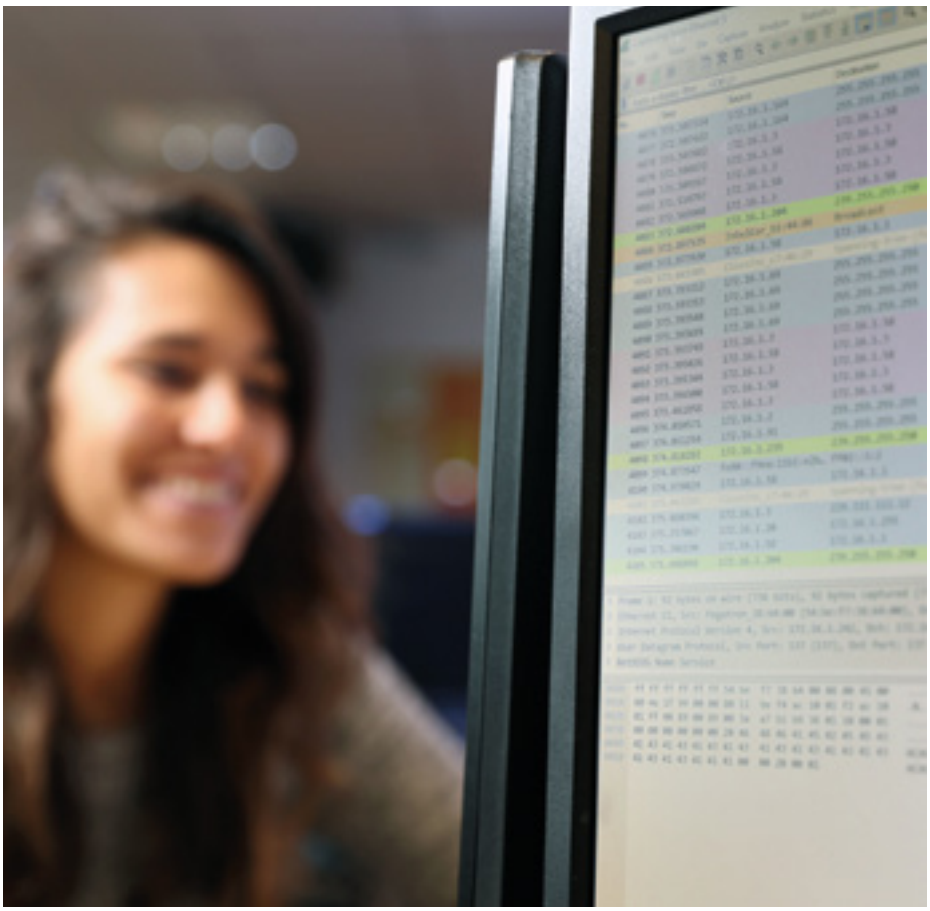
What will you learn?

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 applied software engineering students, though there will be some difference in emphasis.

Applied 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.



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: **029 2251 0951**

“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**

Beginning your career

Our students have an excellent reputation for finding employment after they graduate with 94% of our graduates in highly skilled employment 15 months after 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 specialities 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, Advanced Computer Science and Natural Language Processing.

Careers and Employability Services

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:

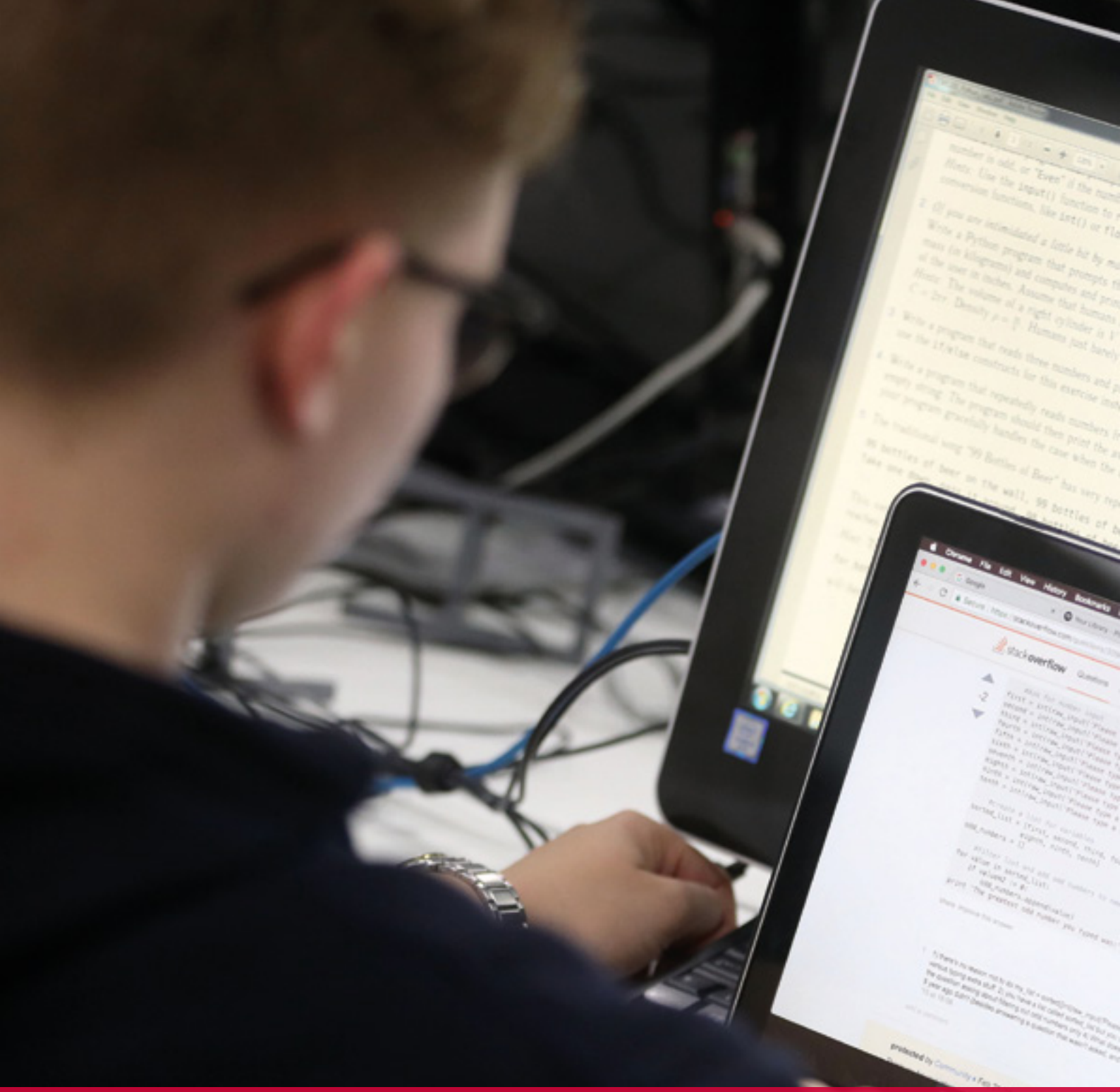
- major consultants who design and operate large systems for major third-party clients, including CGI, Capgemini and Thales
- commercial organisations with large IT set-ups, including ExxonMobil, Ford and IBM
- consultants working on embedded systems e.g. ARM Holdings and HP
- niche system designers 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



"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**

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

BSc Computer Science with Security and Forensics

Choosing Cardiff

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.

Favourite memory

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.

Graduation and beyond

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.

Lauren Heymer

BSc Applied Software Engineering

Choosing 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.

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.

Beyond your studies

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.

Favourite part of the 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.

Words of advice for future software engineers at Cardiff

My advice is pick something you think you will enjoy.

Caitlin Burns

BSc Computer Science

Choosing 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.

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.

Beyond your studies

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.

Favourite part of the 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.

Words of advice for future computer scientists at Cardiff

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.

Oliver Storey-Young

BSc Computer Science (Year in Industry)

Choosing 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.

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.

Beyond your studies

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.

Favourite part of the 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.

Words of advice for future computer scientists at Cardiff

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.

Degree programmes

Applied Software Engineering BSc (Hons)

UCAS Code: 4JVD Duration: 3 years

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

You will learn how to work as a software engineer by collaborating in teams on the development of software projects for real clients drawn from the private, public and third sectors. Much of the teaching, learning and assessment is based in the context of these projects.

You will get many further opportunities to meet and work with practicing professionals from a wide range of organisations, through case studies, networking events, guest presentations and workshops.

You will leave the Academy with the qualifications and professional skills you need to find your job as a software engineer. Our previous students have managed to secure work placements and even graduate jobs from relationships they have built during their studies. Several students have gone on to form their own start-up companies.

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

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

I enjoyed a work placement in the summer holiday at a start-up called FAMLI which fuelled my thinking about what I could do with what I am learning. I'd like to stay at the university to do a masters degree focusing on software in business.

Josh Gill, BSc Applied Software Engineering

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

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.

Plus, you also have the opportunity to complete a year in industry or a year abroad.

You will be based in our new purpose-built building Abacws, in the heart of Cardiff University's Cathays Campus. Featuring outstanding facilities such as:

- computer labs designed to enable group work as well as classes and individual study
- makerspace and IT workshop to support practical computer science projects
- cybersecurity lab for teaching and research.

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 with an introduction to some of the fundamentals of computing, applications of computing, and develops the relevant intellectual and learning skills.

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.

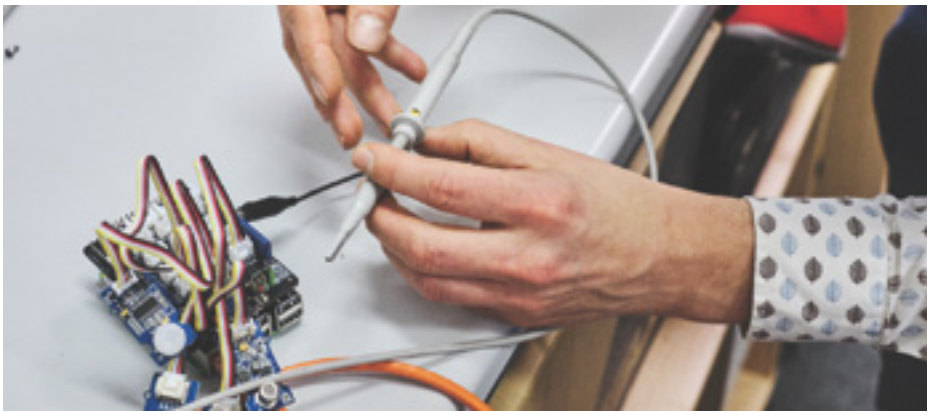
Year three

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



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

I looked at a lot of universities, but Cardiff offered the cybersecurity and forensics module which made it my first choice. It's an area of computer science that fascinates me and is so important right now, so was something I really wanted to study. I'm also really aware of the drive to see more women in STEM and I want to be part of the number and part of the change.

Charlene Yeh,
BSc Computer Science

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.

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

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

Research

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

Our research activity is organised into four priority areas focusing on emerging trends within our rapidly evolving discipline: artificial intelligence, cybersecurity and privacy, human-centred computing, and visual computing.

Artificial intelligence

Our research explores how computers can effectively perform tasks previously only possible for humans, and potential solutions to ambitious, far-reaching challenges.

Our primary focus in our research labs is on:

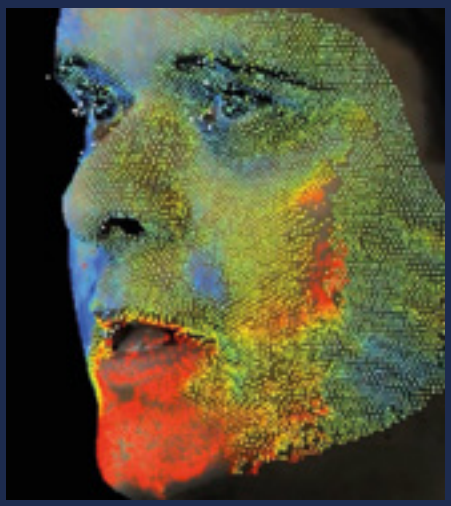
- knowledge representation and reasoning
- computation argumentation
- natural language processing
- data analytics and machine learning

Cybersecurity and privacy

Our research focuses on the fusion of data science/analytics and AI methods and explores cyber risk, threat intelligence, attack detection and situational awareness.

Core research themes include:

- early detection and automated responses to cyber attacks
- investigating goal-oriented risk, process and impact modelling
- human factors – focusing on individuals' susceptibility to attack and organised cybercrime
- detecting digital and physical indicators of compromise and mitigating attacks
- ensuring privacy by design



Human-centred computing

Our research explores how computers can better support our daily lives and how emerging systems might impact on individuals, communities, and society at large.

Our primary focus in our research labs is on:

- human-robot interaction (HRI)
- digital healthcare
- extended reality (XR) and human-computer interaction (HCI)
- collaboration and social computing

Visual Computing

This research area looks at the images that are captured every day and how computers can analyse them effectively.

Our research covers:

- computer vision and computer graphics
- geometric computing
- multimedia data

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:

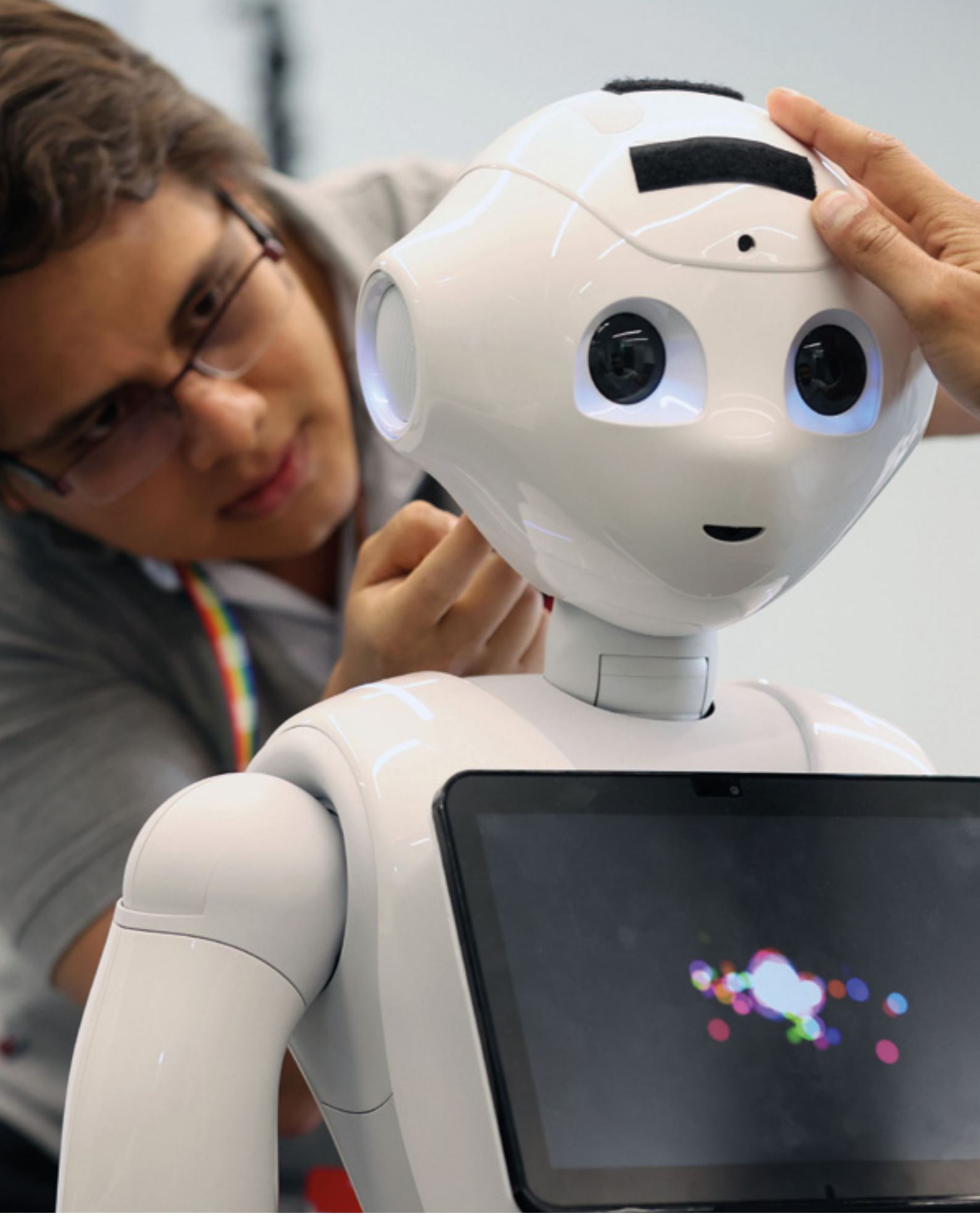
- cybersecurity (security, trust, and privacy issues)
- healthcare (patient record systems and information visualisation)
- the environment (biodiversity management and geospatial information systems)
- telecommunications (communications network design and virtual organisations)
- engineering design (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).

Find out more



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

Entry requirements

BSc Applied Software Engineering
BSc Computer Science

Typical A-level Offer: ABB - BBB

Typical Bacc Wales Offer: Baccalaureate Wales will usually be accepted as an equivalent to one A-level

Typical Int Bacc Offer: 32-31 overall or 665 in 3 HL subjects.

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

MSci Computer Science

Typical A-level Offer: AAB - ABB (must include Maths)

Typical Bacc Wales Offer: Baccalaureate Wales will usually be accepted as an equivalent to one A-level

Typical Int Bacc Offer: 34-32 overall or 666-665 in 3 HL subjects (Must include grade 5 in HL Maths)

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

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

Typical intake: 215
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 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**

Student support

Whether or not you use student support services it's reassuring to know that they are available to you should you need them. Every student is assigned a personal tutor but should you need extra support we have a range of services available to you.

These include:

- disability and dyslexia support
- counselling and wellbeing guidance
- international student support
- student mentor scheme

Email: **studentconnect@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 Louise Knight
School of Computer Science and Informatics, Cardiff University, Abacws, Sengennydd Road, Cardiff CF24 4AG

Tel: **029 2251 0951**
Email: **comsc-ug@cardiff.ac.uk**
Web: **www.cardiff.ac.uk/computer-science**

International admissions:
Email: **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**


How to find us
Key
School of Computer Science and Informatics
University and NHS buildings
Student residences
HEATH PARK
ROATH PARK LAKE
MYNACHDY
CATHAYS CEMETERY
PEN-Y-LAN
ROATH PARK
MAINDY
GABALFA
CATHAYS
PONTCANNA FIELDS
BLACKWEIR FIELDS
ROATH
PONTCANNA
BUTE PARK
RIVER TAFF
CITY CENTRE
CANTON
RIVERSIDE
QUEEN ST. STATION
CARDIFF CENTRAL
NINIAN PARK
ATLANTIC WHARF
RHYDHELIG AVENUE
CAERPHILLY ROAD
EASTERN AVENUE
WESTERN AVENUE
WHITCHURCH ROAD
CLODIEN AVENUE
NORTH ROAD
ALLENSBANK ROAD
WEDAL ROAD
LAKE ROAD WEST
LAKE ROAD EAST
LADY MARY ROAD
BRANDRETH ROAD
TY GWYN ROAD
SHIRLEY ROAD
TY-DRAW ROAD
NINIAN ROAD
PEN-Y-LAN ROAD
FAIROAK ROAD
CROWN WAY
MAINDY CENTRE
MAINDY ROAD
FOOTBRIDGE
MONTHERMER ROAD
DAVIOT STREET
MACKINTOSH PLACE
CRWYS ROAD
CATHAYS TERRACE
WELLFIELD ROAD
ALBANY ROAD
CATHERINE ST.
WOODVILLE ROAD
BASIL PLACE
COLUM DRIVE
COLUM ROAD
QUEEN ANNE SQUARE
CORBETT ROAD
COLLEGE ROAD
KING EDWARD VII AVENUE
MUSEUM AVENUE
CITY HALL ROAD
MUSEUM PL
ST. ANDREWS PL
PARK PLACE
COBURN STREET
RICHMOND ROAD
LOWTHER ROAD
SALISBURY ROAD
GORDON ROAD
CITY ROAD
THE PARADE
NEWPORT ROAD
WEST GROVE
FITZALAN PLACE
SOPHIA GARDENS
CATHEDRAL ROAD
LLANDAFF ROAD
BOULEVARD DE NANTES
STUTTGART STRASSE
GREYFRIARS ROAD
DUMFRIES PLACE
STATION TERRACE
THE FRIARY
QUEEN STREET
KINGSWAY
CARDIFF CASTLE
CASTLE STREET
DUKE ST.
COWBRIDGE ROAD EAST
WELLINGTON STREET
LOWER CATHEDRAL RD.
CLARE STREET
CHARLES STREET
CHURCHILL WAY
BRIDGE ST.
CARDIFF ARMS PARK
PRINCIPALITY STADIUM
WESTGATE STREET
ST. MARY STREET
THE HAYES
ADAM STREET
BUTE TERRACE
NINIAN PARK ROAD
TUDOR STREET
WOOD STREET
CLARE STREET
CALLAGHAN SQUARE
HERBERT STREET
TYNDALL STREET
CENTRAL LINK
BUTE STREET
LECKWITH ROAD
SLOPER R.
A470
A469
A48
A4119
A4161
A4232
A4160
B4262
B4267
B4258

Important Legal Information

The contents of this brochure relate to the Entry 2024 admissions cycle and are correct at the time of going to press in September 2023. 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.

FSC www.fsc.org MIX Paper from responsible sources FSC® C023480

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.

Mae'r ddogfen hon hefyd ar gael yn Gymraeg. This document is also available in Welsh.

Cardiff University is a registered charity, no. 1136855

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 UNIVERSITY
PRIFYSGOL CAERDYDD

To find out more about the School of 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 2251 0951**
Email: **comsc-ug@cardiff.ac.uk**

School of Computer Science and Informatics
Cardiff University
Abacws, Senghenydd Road,
Cardiff CF24 4AX

Stay in touch

@CompScienceCU

Student life

Got questions about student life? Get them answered at:

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.

Mae'r ddogfen hon hefyd ar gael yn Gymraeg.
This document is also available in Welsh.

COMSC/0923