CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

Computer Science

Undergraduate degree programmes

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

95%

of our students are in graduate-level jobs or further study within 15 months of graduation

Source: The Guardian University Guide 2025

Computer science holds the potential to shape our world for the better.

From healthcare and security to accessibility and climate change, we are driven by a shared dedication to embrace creativity and explore solutions to some of the biggest challenges we face in the 21st century and beyond.

We believe in harnessing the power of computers to improve people's lives.

We have trained computer scientists for more than half a century, and we are proud to continue inspiring the next generation now and into the future.

Your education will be shaped by our community of academics whose work has a direct impact in the world across a range of fields, including artificial intelligence, cyber security, human centred computing, and visual computing.

Did you know?

We have been named as an Academic Centre of Excellence in Cyber Security Research by the UK's National Cyber Security Centre (NCSC) - the first institution in Wales to be given this status.

Student experience

In Cardiff, everything starts from our strong sense of place. In computer science, we've created a base from which you can explore your individual interests, while still being supported as part of a larger community.

To help you settle into your first year, you will have access to an academic member of staff as a personal tutor and an experienced student as a student mentor.

During your studies we'll provide you with all the basics you'll need for a solid grounding in computer science, while encouraging you to think about the wide range of paths you can choose to explore during your time with us and beyond. You'll learn the fundamentals across all our programmes, including programming languages and data structures, but will be free to explore your own interests as your degree progresses.

Many of our programmes prioritise flexibility, allowing you to shape your degree and subsequent career path as your interests develop. Our computer science courses have a common first year', so in most cases you're free to switch between programmes at the end of year one and explore more specialist areas in optional modules.

Beyond studying, if you want to dip your toes into industry or a year abroad, we'll encourage and guide you every step of the way – and we'll be here whenever you need us, ensuring that you are still a part of our community no matter where you are in the world.

We also pride ourselves on the social aspect of our community. There are a variety of societies and extracurricular activities you can get involved with, including the award-winning society CyberSoc run entirely by students, a STEM Ambassador Scheme, a Formula AI racing team, and a variety of hackathons throughout the year. Our Student Experience Team also regularly organises a range of events, such as wellbeing sessions with animals, charity bake sales, and bowling trips.

Computer Science or Applied Software Engineering?

We offer degree paths in both computer science and applied software engineering. Wondering which one is right for you?

A degree in computer science covers a broad range of principles, while applied software engineering is an engineering degree offering a more singular focus on the design and creation of software products.

What will you learn?

Computer science

Computer science concentrates on core concepts and technologies involved in programming a computer.

You will study how data is stored, processed, applied and kept secure by information processing systems, and you will learn programming languages, databases, operating systems, networking, cyber security, data science and other sophisticated technologies. You will also briefly explore software engineering subjects, such as software development.

As a computer science graduate, you will be 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

Applied software engineering focuses on designing and building the right software systems in the right way. It teaches you to manage the whole software development lifecycle 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?

If you want to explore 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.

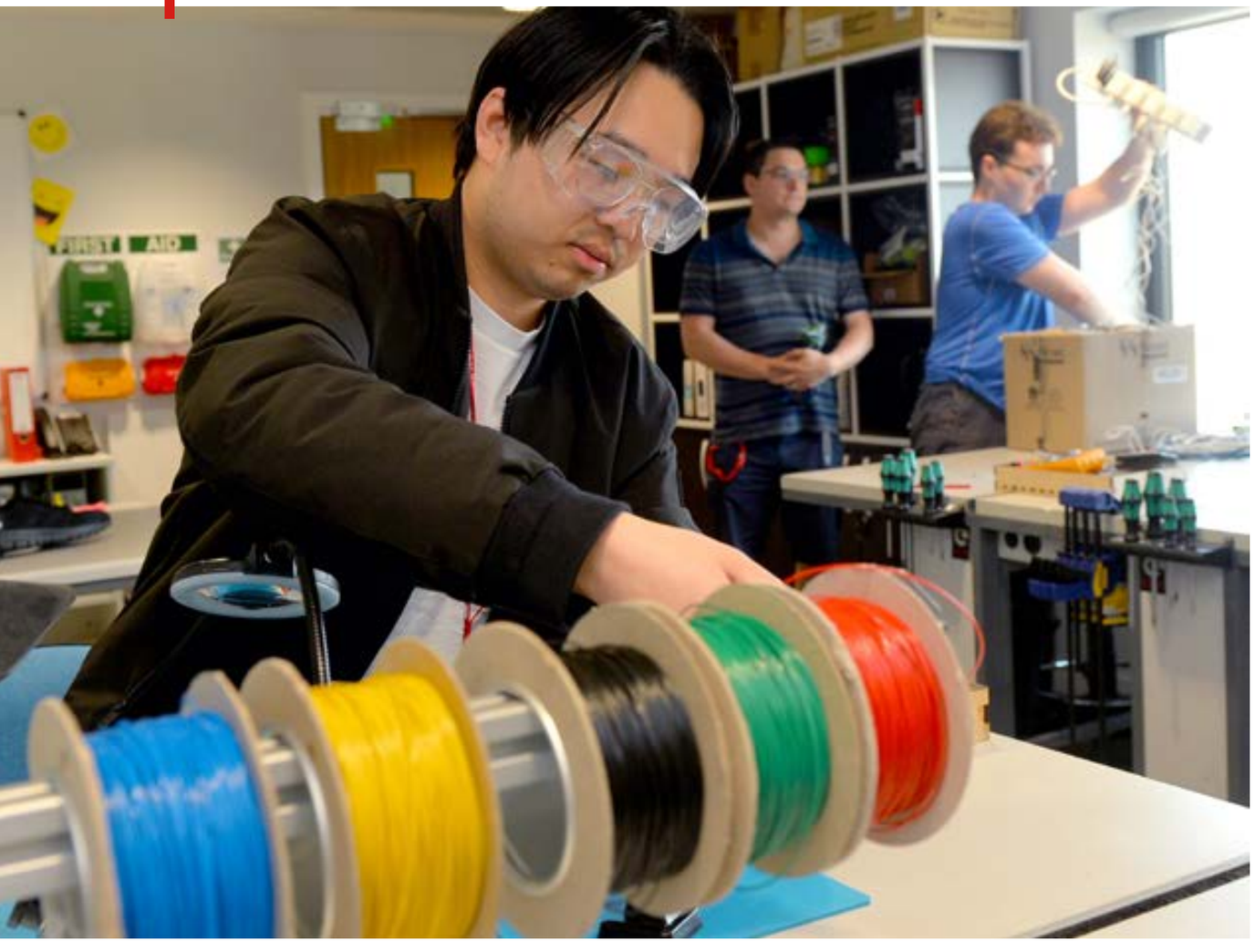
If you're still not sure which degree is best for you, please contact our team:

Email:
comsc-ug@cardiff.ac.uk

"We've done lots of real-life client projects and that's definitely given me the experience and the confidence that I need to actually apply those skills to the real world."

Rhiannon,
BSc Applied Software Engineering

Year in industry and **study abroad** options



Opportunities to study abroad and gain industry experience will vary depending on the degree path you take.

If you study applied software engineering, you will benefit from work experience embedded throughout your degree, as it's a core part of the way in which you are assessed. You will also be well placed to find summer work placements and our employability team can support you.

If you're studying on one of our computer science programmes, you'll have the opportunity to complete a salaried year in industry or to study at one of our partner universities abroad.

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 graduating, and it's a great opportunity for you to figure out what you want to do.

We have links with over 300 institutions across the world, and previous students have completed placements at organisations such as Admiral, Airbus, CERN, GSK, Hewlett Packard, Lloyds Bank, Red Bull Racing, and many more.

Your placement will typically last between 10-12 months and takes place in year three. 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 extends our three-year BSc degree programmes to four years and our 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 if you're not sure what you would like to do just yet.

In addition to our year in industry, there are regular opportunities to gain relevant work experience outside of your degree through unpaid short work experience insights, paid summer internships and part-time positions.

There are also University schemes to support opportunities for academic summer research projects.

Year 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. You'll experience other cultures and viewpoints, make new friends from across the world, share unforgettable experiences, and you could even find yourself learning a new language.

We have partners across Europe and globally, including institutions in the USA, Canada, Australia, New Zealand, Singapore, Hong Kong and South America.

Find out more about **studying abroad**.

In the heart of our campus and a short walk from the city centre are our two main hubs – Abacws and the National Software Academy.

Our purpose-built home Abacws was designed in collaboration with students and lecturers to create flexible and creative workspaces, with innovative teaching, study, and co-working spaces.

The building is designed to allow greater collaboration with industry in teaching and for greater interdisciplinary collaboration.

Abacws will be your primary home if you're studying undergraduate computer science, but you'll likely spend a lot of time here even if you're studying on one of our other programmes.

As a student you'll have a MakerSpace to test ideas, as well as dedicated spaces for student projects.

If you study Applied Software Engineering, you'll be based at the National Software Academy (NSA) in the Julian Hodge Building, providing you with an innovative atmosphere for study and collaboration.

The NSA is a short, ten-minute walk from Abacws and our facilities are designed specifically to mimic a workplace environment that integrates industry working practices.

We were established in 1971. Our first Head of School, Professor Bob Churchouse, was taught by Alan Turing while studying his undergraduate degree at Victoria University, Manchester.


Alan Turing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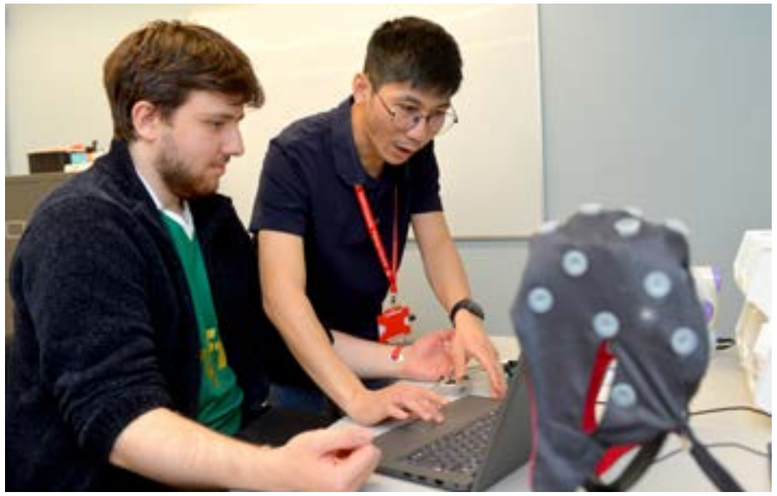

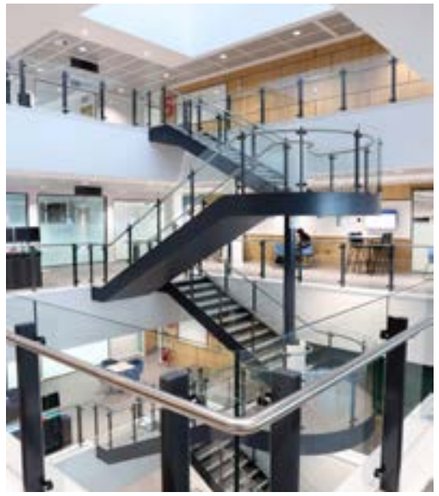

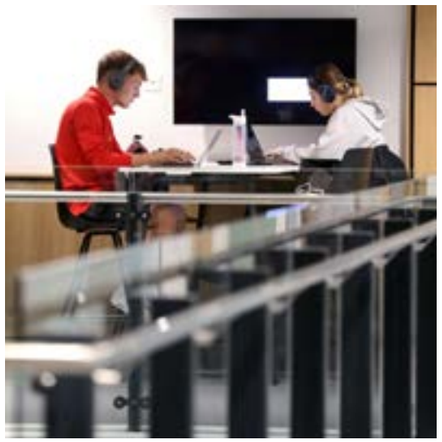


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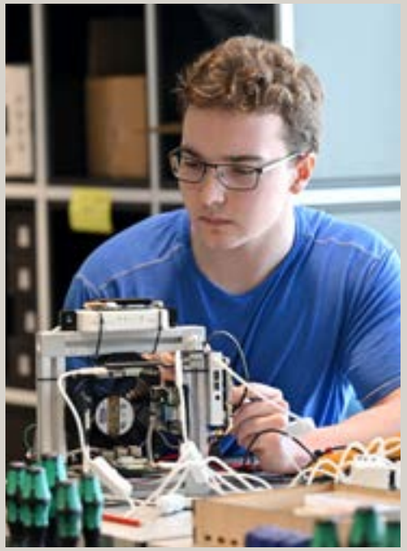

Unlock a world of possibilities

I did my undergraduate degree in computer science here at Cardiff University and now I'm doing my master's in cyber security. It's been a really interesting and fun journey so far.

"I love being in cyber security and it's something that's interested me from a young age. That's why I chose to do a master's degree now, knowing I'd get industry experience through the university, and getting to meet people from industry. That was a really exciting factor for me, which is why I chose to stay in Cardiff for my master's degree.

"It's been really fun to interact with lecturers who have so much real-world experience and know so much about industry, and they're really helpful and hands-on with everything that they share. They're always accessible and really communicative about opportunities available to us."

Jana, Graduate in Computer Science,
now studying Cyber Security (MSc) in Cardiff

Originally from the USA, I moved to the UK to study at Cardiff University. Cardiff has a great reputation for being a research-focussed university and I knew I'd get a unique and well-rounded education- and I did. I was also attracted by the fact that the university has such a large international student population- I was eager to meet and learn from students and teachers from all over the world.

"I'm currently an Engineering Manager, and have actually just accepted a new role at Moonpig, also as an Engineering Manager. After spending 7 years going from junior to midlevel to senior roles as a Software Engineer, I've now taken on a line management role where I manage 6 engineers.

"On a normal day, I attend various meetings about current and upcoming work, do a bit of coding, and have 1:1s with my direct reports where we talk about anything from how their week has been, to their career progression. I work closely with the Project Manager and Designer on our team to ensure that any upcoming work is properly refined and planned before we begin on it."

Megan, Graduate in Software Engineering,
now working as an Engineering Manager at Moonpig

> **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

Applied Software Engineering

Applied Software Engineering (BSc), UCAS code: **4JVD**

Taught at the National Software Academy, this hands-on course is for those who want to learn how software is built and maintained through industry-facing development projects.

This course aims to make you a highly employable software engineer with the skills, knowledge and hands-on experience that graduate employers are looking for in the age of AI.

Designed in close collaboration with industry, this innovative degree will help you gain experience in hands-on software development using current commercial tools and techniques. Our teaching focuses on modern industry practices and technology including the web, the cloud and developer automation.

About the course

Year one

In year one you learn to think like a programmer and begin to code in a professional manner. You will work primarily with languages such as JavaScript, Java and Python to design, develop and deploy web applications according to the needs of customers.

You also will start to develop your knowledge of relational and NoSQL database systems. You will learn how to use the same industry-standard tools that are used by real-world developers, following best practice to develop quality software.

You will begin to develop your professional skills including communication, project management and the principles of agile development.

Year two

In year two you will work on larger, more complex and technically difficult projects.

You will expand your knowledge in areas such as performance and scalability, cyber security and DevOps, and AI for Software Engineers - a module that will look at how to integrate AI into software-based solutions.

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 year three you will learn about user experience design and emerging trends and use these to develop a product with an appreciation of the latest languages, frameworks and tools. You will learn about managing change and adopting technology in organisations, as well as technical challenges in large software systems.

In the Large Team Project module you will collaborate with other team members to effectively manage a project to develop a high-quality software solution to meet the needs of your clients.

The final year builds upon the experiences of years one and two, and brings together all of the elements you will need to think like and work as professional software engineer.

Computer Science

Computer Science (BSc), UCAS code: **G400**

Computer Science (MSci), UCAS code: **G404**

Computer Science with Year in Industry (BSc), UCAS code: **G401**

Computer Science with Year in Industry (MSci), UCAS code: **G402**

Computer Science with a Year of Study Abroad (BSc), UCAS code: **126V**

Computer Science with a Year of Study Abroad (MSci), UCAS code: **G403**

Our flagship course is informed by industry needs and gives students a thorough grounding in the fundamentals of Computer Science, as well as professional skills in problem-solving and project work.

Our Computer Science programme will provide you with the practical skills and theoretical knowledge needed to pursue a career in the exciting and dynamic world of computing. You will learn how to think and act like a computing professional, with an awareness of ethics, security and sustainability.

On this course you will develop transferable technical and professional skills, underpinned by current, state of the art research. The course covers a mixture of fundamental core techniques and concepts together with evolving, technology-based subject matter, informed by close collaboration with our industry partners.

You will be able to adapt to rapidly evolving technology and will be able to create bespoke solutions to real-world problems, using the right tools, in the right way. Our graduates are highly employable, and our programme will equip you to meet the high demand for technical skills in the workplace of the future.

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 (grade B) is required for the four-year MSci degree.

Year one

Modules taught in the first two semesters will introduce fundamental computing skills and concepts that form the basis of your degree. This includes the programming of algorithms using languages such as Python and Java™, an understanding of computer architecture and operating systems, software engineering principles and mathematics for computer science.

You will be expected to develop new technical and professional skills, and to demonstrate individual creativity and originality throughout the year.

Year two

Our second year modules will expand your understanding, skills, and experience by introducing more advanced topics.

We will guide you in exploring the structure and processing of data, expanding simple algorithms into applications that are able to communicate via networks, and designing and implementing a software system. You will also be able to take a selection of optional modules based on your interests across our main research areas.

Year three

In year three you will engage in a core practical module that give insights into the role that data and technological advances have in changing the way we live, learn and work, enhancing your future research, employability or entrepreneurship and professional skills as you begin to look towards life as a graduate.

You will complete an individual project under staff supervision, driven by your interests, and choose three optional modules, building upon the pathway chosen during Year Two according to your specific interests, or drawing from a range of modules informed by research areas such as Robotics, Machine Learning, AI, and Cyber Security.

Year four (MSci students only)

In Year Four you will undertake a substantial team project under the supervision of a member of academic staff. In addition, you will choose from a range of carefully selected, research-informed Level 7 modules focusing on contemporary and relevant topics currently emerging within the discipline, adding breadth and depth to your skills and knowledge.

Computer Science with Cyber Security

Computer Science with Cyber Security (BSc), UCAS code: **G4F4**

Computer Science with Cyber Security with Year in Industry (BSc), UCAS code: **GKF4**

Computer Science with Cyber Security with a Year of Study Abroad (BSc), UCAS code: **125V**

The Computer Science with Cyber Security programme will give you the practical skills and theoretical knowledge needed to pursue a career in the exciting and dynamic world of cyber security.

You will learn how to think and act like a computing professional, with an awareness of ethics, security and sustainability.

On this course you will develop transferable technical and professional skills, underpinned by current, state of the art research. The course covers a mixture of fundamental core techniques and concepts together with evolving, technology-based subject matter, informed by close collaboration with our industry partners.

You will be able to adapt to rapidly evolving technology and increasing cyber security threats and to create bespoke solutions to real-world problems, using the right tools, in the right way. Our graduates are highly employable, and your detailed understanding of computer security and digital forensics techniques will equip you to meet the high demand for cyber security experts.

About the course

Our Computer Science with Cyber Security programme is structured in such a way that you will acquire high-level skills in Computer Science over successive years to become an independent and critical thinker, equipped for professional employment.

Year one

Modules taught in the first two semesters will introduce fundamental computing skills and concepts that form the basis of your degree. This includes the programming of algorithms using languages such as Python and Java™, an understanding of computer architecture and operating systems, software engineering principles and mathematics for computer science.

You will be expected to develop new technical and professional skills, and to demonstrate individual creativity and originality throughout the year.

Year two

Core modules taught in Year Two focus on the application and development of skills covered in year one using practical projects that develop both technical and professional skills. You will gain insights into industry tools and techniques used in software engineering, including development of websites and databases. You will deepen your understanding of data structures and algorithms that will underpin advanced topics available from Year Three.

Your choice of optional modules in Year Two will allow you to broaden your skills, studying topics that will complement your focus on Cyber Security, such as AI, and will give you the opportunity to begin to consider your Final Year module options.

Year three

In Year Three you will engage in two core practical modules that introduce the Cyber Security specialisms of Digital Forensics and Incident Response, where you will learn to identify the signatures of a Cyber Security attack, and Applied Cryptography, in which you will learn how to defend against such attacks.

You will complete an individual project under staff supervision, with a Cyber Security theme, and choose an additional optional module according to your specific interests, or drawing from a range of modules informed by research areas such as Robotics, Machine Learning and AI.

“I looked at a lot of universities, but Cardiff offered the cyber security 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 ,
BSc Computer Science

Applications

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

BSc Computer Science with Cyber Security

Typical A-level Offer:
ABB - BBC

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

Typical Int Bacc Offer:
32-30 overall or 665 - 655 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 - BBB (must include Maths)

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

Typical Int Bacc Offer:
34-31 or 666-665 (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.

Find out more about **applying**.

How to find us

Computer Science and Informatics is located in Abacws Building, on Cathays Campus.

Key

- Computer Science and Informatics
- National Software Academy
- University and NHS buildings
- Student residences

Important Legal Information

The contents of this brochure relate to the Entry 2027 admissions cycle and are correct at the time of going to press in June 2026. 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.

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:

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

Find out more

Email: **comsc-ug@cardiff.ac.uk**

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