School of Computer Science and Informatics
Postgraduate Degree Programmes

www.cardiff.ac.uk/computer-science
Important Legal Information
The contents of this prospectus relate to the Entry 2017 admissions cycle and are correct at the time of going to press in November 2016. However, there is a lengthy period of time between printing this prospectus and applications being made to and processed by us, so please check our website 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 prospectus and our website, the contents of the website take precedence and represent the basis on which we intend to deliver our services to you.

Any offer of a place to study at Cardiff University is subject to terms and conditions, which can be found on our website www.cardiff.ac.uk/offerters and which you are advised to read before making an application. The terms and conditions set out, for example, when we might make changes to your chosen course or to student regulations. It is therefore important you read them and understand them.

If you are not able to access information online please contact us:
Email: enquiry@cardiff.ac.uk
Tel: +44 (0)29 2087 4455

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

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www.cardiff.ac.uk/computer-science
Welcome to the School of Computer Science and Informatics

The School of Computer Science and Informatics offers a range of flexible and diverse degree programmes to suit the different expectations and aspirations of today’s students.

Based in Europe’s youngest capital city, we are blessed with a great location and excellent facilities for you to reach your full potential.

The prospects for master’s graduates in Computer Science from Cardiff University remain very strong, with 77% finding employment and/or further study six months after graduating.

We offer a variety of challenging and stimulating master’s degrees suitable for students with diverse academic backgrounds, which we regularly review and update to ensure the content is both contemporary and relevant. We place a strong emphasis on employability, and have established an External Advisory Board made up of successful figures from industry and academia who provide guidance, insight and feedback on our learning and teaching.

You will have the opportunity to work with staff at the forefront of research in their disciplines, and access to dedicated facilities and equipment in your field of interest. Our academic staff are enthusiastic technologists and computer scientists, being leaders in the areas of their expertise and keen to share their skills, knowledge and understanding. Much of the research that our School undertakes is internationally leading and part of our mission is to share the excitement of discovery and innovation with our students.

If you want to learn more about life in our School, please feel free to join us on Facebook and Twitter, and you are welcome to check out what our alumni are doing on LinkedIn. It would be a pleasure to see you in Cardiff, and on behalf of all staff here at the School of Computer Science and Informatics, may I wish you the best of luck with your future studies.

Professor Stuart Allen
Head of School
Cardiff is a thriving and attractive city that is widely recognised as an outstanding place in which to live and study.

Location
Cardiff is located on the coast of South Wales, which has beautiful national parks and beaches only 30 minutes away. Cardiff is approximately 230km (145 miles) west of London and is easily accessed by train in about two hours. Cardiff has excellent transport links (it is ranked first in the UK for the most transport friendly city) with an international airport that has flights to many cities in Europe.

The perfect student city
Cardiff is a small city with a population of about 360,000 people. Approximately 20% of the population are students, which makes it safe, friendly and affordable (see pages 6-7). Cardiff, however, is also a capital city with all the culture, sports, shops, entertainment, work opportunities and atmosphere you would expect of a modern European metropolis.

Cardiff: a Capital City

© Andrew Hazard, courtesy of www.visitcardiff.com
With its distinctive character, high quality of life, and growing national and international reputation, the city hosts many high-profile sporting and cultural events, including international rugby, soccer, cricket, motor sport and Cardiff Singer of the World. It is also home to the biannual Artes Mundi exhibition and prize (the UK’s largest art prize).

Home to the world-renowned Welsh National Opera, it boasts prestigious concert venues such as the Wales Millennium Centre, St David’s Hall and the Motorpoint Arena, as well as the iconic Principality Stadium, National Museum Wales, several theatres and the historic Cardiff Castle.

Cardiff is the location for award-winning television productions, including Doctor Who, Sherlock, Torchwood and Casualty, and the Doctor Who Experience in Cardiff Bay is a popular attraction.

This means you get a small inexpensive city you can easily walk around, but also an exciting city where there is always something to do.

A diverse, international city
Cardiff was one of the UK’s first multicultural cities and an estimated 94 languages are spoken here. This is a real benefit for international students because many of the food and ingredients you use in your country are also sold in Cardiff. You can also be assured that there are many religious and cultural facilities across the city, including mosques, synagogues, churches and temples.

10 facts about Cardiff
› Our Cathays Campus is in the city centre of Cardiff
› The School of Computer Science and Informatics is located in the Queen’s Buildings at the southern end of the University campus, in the heart of the city centre
› Cardiff Airport has about 30 flights a day to UK and European cities
› Cardiff is only 2 hours from London by train
› Cardiff has a 74,500 seater stadium, an international sports village and a professional football club: Cardiff City FC
› Cardiff has more than 330 parks and gardens
› Cardiff has moved up the rankings to become Europe’s ‘third best’ capital city to live in, a new European Union survey has revealed
› The popular TV shows Doctor Who and Sherlock are filmed in Cardiff
› Cardiff has one of the UK’s biggest shopping centres, with around 40 million shoppers each year
› Welsh is Europe’s oldest living language and is spoken by 20% of the population.

Weather in Cardiff
Like the rest of Britain, the weather in Wales is very changeable. There are four distinct seasons: winter can get very cold and you will often need to wear warm clothing, including hats and gloves as the temperatures can get as low as -5 degrees at night. Spring starts around March and the weather can be very changeable, raining and cold one minute, and sunny and bright the next. The weather improves in the summer, which starts in June; you will be able to wear shorts and t-shirts and should be careful not to get sunburnt. The temperature can reach about 27 degrees.
Cardiff University has an international reputation for excellence in teaching and research, built on a history of service and achievement since 1883, and recognised by our membership of the Russell Group of leading research-led universities.

A History of Achievement
Founded in 1833, Cardiff is now established as one of Britain’s leading universities and is a member of the UK Russell Group of 24 “research intensive universities”. We attract students from more than 100 countries and our research funding from the Research Councils, public bodies, industry, commerce and other sources exceeds £90m annually. We have celebrated a number of notable achievements during the past few years. For example, Cardiff University was ranked fifth amongst UK universities when judged on research quality and second when judged on impact in the 2014 Research Excellence Framework, a prestigious national assessment exercise carried out periodically by the UK funding councils. This has confirmed our place as a world-leading centre of research excellence. Our research staff are world class and include Nobel Laureates, fellows of the Royal Society and members of other prestigious institutions. We were also awarded our fifth Queen’s Anniversary Prize – an award that recognises universities and colleges across the UK for work of outstanding excellence.

We actively pursue collaborations that will help us to deliver social and economic benefits for Wales, the UK and the world. We are currently part of the GW4 Alliance and have strong links with the public sector, Higher Education institutions, and industry in Wales, the UK and beyond. Looking to the future, further partnerships and collaboration are central to our mission to be a world-leading university; internally – through interdisciplinary teams – and externally, through links with organisations of all types, nationally and internationally.

Facilities
The University has a mixture of historic and modern buildings and facilities. We have recently unveiled plans to invest over £300m in new buildings to provide state-of-the-art research, teaching and student facilities which will include the world’s first Social Science Research Park, a purpose-built Centre for Student Life, Cardiff University Brain Research Imaging Centre (CUBRIC) and a Translational Research Facility comprising the Institute for Compound Semiconductors and Cardiff Catalysis Institute turning research questions into ‘real world’ answers.

Location
Our Cathays Park campus is located in and around the impressive Portland stone buildings, parks and wide tree-lined avenues that form Cardiff’s attractive civic centre. The majority of academic schools are located here – just a few minutes’ walk from the city centre. The four academic schools offering healthcare courses (excluding Optometry and Pharmacy) are based at the Heath Park campus, approximately one mile away, which is also home to the University Hospital of Wales.

IT Facilities
Our modern IT facilities enable easy access to a range of support, tools and resources to help your study.

Our network provides you with access to a wide range of software applications, online resources and services. You will also benefit from a free subscription to Office 365 ProPlus for the duration of your studies.
Languages for All

Learning languages open doors to new experiences, expands your networks and improves your employability.

We offer a flexible and innovative choice of study options designed to fit with your degree, so that you can learn a new language or develop your existing skills.

Our programmes use the latest technology to ensure that you are able to make the most of your language learning at the times and the places that best suit you.

Courses are currently offered in:
- French
- Italian
- Japanese
- German
- Spanish
- Mandarin.

Students can also study Welsh through the Welsh for All provision.

Libraries

Our modern libraries are welcoming, comfortable and offer a wide range of information resources in print and online. We provide a flexible study and research environment, with study spaces to suit all learning needs. Libraries also have long opening hours, including evenings and weekends.

There are more than 1.3m printed books in the library collection and an extensive range of online resources including eJournals, eBooks, indexes, databases, statistical collections and full test archives. Research students in particular benefit from an extensive range of specialist collections.

The Doctoral Academy

- A University-wide approach to ensure a coordinated approach to doctoral study
- A central source for doctoral students to access a comprehensive range of workshops and support to progress their project and develop their careers
- Regular cross-School activities enable a network of researchers and a stimulating research environment
- Annual student-led conferences and other research showcase events
- Guest speakers such as Jorge Cham, creator of ‘PhD Comics’.

Looking to the future, further partnerships and collaboration are central to the University’s mission to be a world-leading university . . .

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We know that where you live is very important to you. You will want to settle quickly and live in a secure, sociable location that is also a suitable study environment.

International postgraduate students are guaranteed a single-occupancy place in University residences for the full duration of their studies, and EU students for the first year of their studies.

We offer outstanding quality and value with a range of residences to suit individual preferences and budgets.

Living in a University residence provides you with the opportunity to meet and get to know students from a variety of backgrounds and studying a range of different subjects. Dedicated postgraduate flats and blocks are available so that you can meet, live and work alongside students who understand the demands of postgraduate study.

We have numerous residences, with facilities, locations and budgets to suit every student.

Your choices include:

- Single or mixed gender accommodation
- Private or shared bathrooms. About 70% of University residences have private bathrooms
- Self-catered, part-catered or fully catered (with vegetarian options)
- A variety of social and sporting facilities
- A limited supply of residences suitable for couples or families.

Information on how to apply for University residences will be sent electronically to all eligible offer-holders.

Close to the School

Some of Cardiff’s residences are very well located, with many residences being a short distance from the School. The majority of students are able to walk or cycle easily to their lectures every day.

Safe and supportive

One of the advantages of University residences is the support you are offered. Each residence has a network of administrative staff, student wardens and security staff that provide 24-hour assistance. Only students, guests of students and staff are allowed on University residences sites. This makes them safe and secure.

What do University residences provide?

A typical apartment in University residences includes six study bedrooms. Six occupants share a kitchen and every student has their own bedroom. Each room has a bed, desk, chair, wardrobe and storage, so you won’t need to buy additional furniture. Halls of Residence bedrooms are also connected to the University network and highspeed internet. In your flat you will have access to a shared kitchen/dining room. This area includes a cooker, refrigerator, sink, table and chairs. If you choose en-suite, you will have your own bathroom with shower.

How much do University residences cost?

The cost of residences depends on several factors, including the residence you choose, length of stay, meal options and whether you want private bathroom facilities. University residences are very good value as the cost includes water, electricity, security, furniture and internet access. As everything is included in one price, it helps you budget more easily.

For the 2016/17 year self-catering residences ranged from £99 – £126 a week. Part/fully catered residences ranged from £112 – £136 a week. Rooms with private bathrooms are generally more expensive than rooms with shared bathrooms.

* Please note this cannot be guaranteed and you should not bring your family to Cardiff until suitable accommodation has been secured.
Private Sector Accommodation

For UK students, or for any international or EU Students who wish to rent privately owned accommodation rather than live in University residences, there is a good variety of accommodation available for rental in the city.

Our Residences Office can provide you with lists of properties known to us that are currently available to rent. Our Students’ Union also runs its own professional letting agency, Cardiff Student Letting, which provides student houses for many budgets and does not charge agency fees. Other letting agencies are available within the city, but you should always ensure they are reputable before signing any paperwork or handing over any money.

How does Cardiff compare with other places?

Cardiff has many advantages which make it a more affordable place to study than other university cities. These include:

- Cardiff is a compact city and the University is in the middle – therefore you won’t have far to travel between the University, city centre shops and your accommodation.
- Cardiff is also very flat, making it easy to walk or cycle around. You won’t need to spend money on buses or taxis.
- Cardiff council runs bicycle and car sharing schemes. This will make it even easier for you to get around without large extra costs.

Living Expenses

Cardiff is one of the most affordable cities in the UK. We estimate that a single student in Cardiff would need approximately £800 a month. This means that a postgraduate student (September – June) would need approximately £9,600 a year. These estimates include accommodation, bills, food, books, clothes, travel, telephone and social expenses.

This is intended to give you an idea of the living costs for a student in Cardiff and should be used for guidance only. It estimates the average cost of living in Cardiff. Actual living costs will vary from student to student. Students who are on a budget can live on less if they wish to do so. It is your responsibility to ensure you have sufficient funds to cover your living costs while studying at Cardiff University.

International Students

The minimum cost of living as recommended by UKVI for studying outside London is £1,015 per month. To pass the maintenance test for your Tier 4 student visa, you will have to show you have money for the cost of your first year tuition fees and living costs of £9,135.
The exciting and dynamic fields of Computer Science and Informatics underpin many aspects of modern life.

Our stimulating and cutting-edge master’s degree programmes will give you a real advantage in the job market, with an advanced qualification highly regarded by employers, and allow you to position yourself to take full advantage of future technological developments.

Teaching, learning and assessment

Modules are delivered through a series of either full or half-day contact sessions, which include lectures, seminars, workshops, tutorials and laboratory classes. Most of your taught modules will have further information for you to study and you will be expected to work through this in your own time according to the guidance given to you by the lecturer for that module.

You will study taught modules to a total of 120 credits during the diploma stage of your degree. All taught modules are worth 20 credits. The placement stage (if you are doing one) is worth 120 credits. The master’s stage of your degree will be an individual project (worth 60 credits) which you will write up as a dissertation, after the diploma or placement stage.

During the diploma stage, full-time students must take all core modules and then select further optional modules to make up their 120 credit total. Part-time students take 60 credits per year. The teaching year is split into two semesters (autumn: 14 weeks, spring: 17 weeks). Each semester consists of 11 teaching weeks followed by a revision week and an assessment period which is two weeks in the autumn semester and five weeks in the spring semester.

Friendly staff and support

At the start of the course you are allocated a personal tutor, who is an academic member of staff in the School and serves as a point of contact to advise on both academic and personal matters in an informal and confidential manner. Your personal tutor will monitor your academic progress and will also supply references in support of any job applications that you make.

Your personal tutor will monitor your progress throughout your time at university and will support you in your Personal Development Planning. You will see your personal tutor at least once each semester. Outside of scheduled tutor sessions, our senior personal tutor runs an open door policy, being on hand to advise and respond to any personal matters as they arise.

As a School, we pride ourselves on providing a supportive environment through which we are able to support our students with the majority of personal problems that arise. However, as in life, there are things that can crop up that require more specialist help. The University provides a range of specialist services, all free of charge, that students can be referred to if needed. These encompass advice services covering health, careers, finances, counselling and personal development, to name a few.

Student feedback mechanisms

We believe that providing suitable feedback mechanisms is crucial to ensure that the best programmes of study are available to our students. The School has a student/staff panel consisting of elected student representatives and members of teaching staff who meet to discuss academic issues. Any issues that you feel need attention can be highlighted to your student representative, who will raise the query with the panel.

In conjunction with the work of the panel, all students are provided with an opportunity to complete feedback questionnaires at the end of the autumn and spring semesters. These mechanisms allow the School to constantly review courses and our students to receive the best provision, delivered in a consistent manner, across all of our degree programmes.
The school has five dedicated cross-platform laboratories, comprising Macs, Windows and Linux based machines.

Library facilities
The School library is conveniently located in the Trevithick building, within the same complex as the School itself. Students can borrow up to 12 books at any one time, with a standard loan period of up to three weeks. Heavily demanded books, such as recommended texts, can usually only be borrowed for shorter periods of time. Some books can also be accessed electronically.

The library staff are on hand to offer specialist assistance and provide workshop training in information searching and literature research. The Trevithick Library also contains a PC room, 24 open access computers, self service issue/return, 24 hour book return and four bookable group study rooms, each equipped with plasma screens.

School facilities
The School has five dedicated cross-platform laboratories, accessible solely by students from the School, comprising Macs, Windows and Linux based machines, as well as a specialist cybersecurity and computing forensics facility. The majority of these labs can be accessed on a 24/7 basis and provide our students with free printing facilities.

The University campus is covered by the Cardiff University Wireless Network, which is freely available upon registration to staff, students and invited guests offering flexible access to online resources via laptop, tablet and Wi-Fi enabled phones. Our facilities are consistently rated among the top three of all computing schools in the UK, by students voting in the annual National Student Survey.

Development
You may have participated in a process of Personal Development Planning (PDP) during your previous studies or in the workplace. During your master’s course, PDP is designed to help you to adjust to the intensity and level of study and to build on and enhance the variety of skills which you will have developed during your previous studies and work experience. PDP will help you to get the most out of your student experience at Cardiff and make your master’s year a success by encouraging you to take responsibility for your own learning and development.

The records you keep as part of the PDP process will constitute a valuable profile of what you have achieved during your time at university, both academically and in a wider sense.

Your personal tutor and dissertation supervisor will support you through the PDP process, and the School will provide you with support, guidance and facilities for recording your achievements and reflective statements.
The School of Computer Science and Informatics aims to educate and inspire the next generation of national and international leaders in the discipline.

We are proud to cater for a diversity of interests, backgrounds and aspirations for graduates from the UK and overseas.

The School has significant experience of running MSc programmes, both conversion and specialist. This portfolio of MSc programmes is regularly reviewed and updated to ensure the content is contemporary and relevant, placing emphasis on both research-led teaching (through specialist modules and programmes) and employability. The design of our postgraduate taught course portfolio has been influenced by feedback from alumni, and industrial and academic experts.

Many of our degrees are professionally accredited by the BCS, the Chartered Institute for IT. Ensuring that our degrees are relevant to the latest demands from industry is a further highly regarded endorsement for potential employers.

The portfolio has been designed to allow you to select the option that best fits your interests and career aspirations. We offer conversion master’s degrees which provide the opportunity to transfer to a career in computing, whilst the specialist master’s programmes provide graduates of computing with the opportunity to enhance their knowledge, skills and understanding, through modules taught by research experts in a given area.

Postgraduate Research Degrees
We offer cutting edge research degrees that provide you with the opportunity to become part of a strong, dynamic and internationally successful research school. For full details about our internationally recognised research areas and about studying for our PhD degrees, please see pages 24-27.

Postgraduate Taught Degrees
We offer a variety of challenging and stimulating master’s degrees that are suitable for students with diverse academic backgrounds.

Specialist master’s programmes
Our MSc degrees in Advanced Computer Science and Information Security and Privacy are for students who have completed a degree in computer science or related subject. These degrees will allow you to hone and expand your existing skills to an advanced level, so you will graduate with specialised expertise at the forefront of your chosen field.

Conversion courses
We offer two distinctive conversion master’s programmes, each with a particular flavour and focus which have been specifically designed for graduates who want to move into computing from another discipline.

MSc Computing offers a structured programme of study which will allow you to enter a broad range of computing jobs and roles. The MSc Computing and IT Management caters for those who wish to focus more on the managerial aspects of modern computing systems and their interaction with organisations.

Joint degrees
Together with the School of Mathematics we are pleased to offer the MSc Data Science and Analytics. This MSc focuses on the skills and understanding required to work efficiently and effectively with the large, complex data sets that are a feature of the modern world.

This MSc Computational and Data Journalism is a joint honours degree with the School of Journalism, Media and Cultural Studies. It develops knowledge and skills through research-informed learning in digital journalism, data science, computer coding and digital development.

<table>
<thead>
<tr>
<th>Programme</th>
<th>Type</th>
<th>Full-time</th>
<th>Part-time</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>MSc Advanced Computer Science</td>
<td>Specialist</td>
<td>1 Year</td>
<td>3 Years</td>
<td>Pages 12-13</td>
</tr>
<tr>
<td>MSc Advanced Computer Science with Placement *</td>
<td>Specialist</td>
<td>Up to 2 years</td>
<td>Not Available</td>
<td>Pages 14-15</td>
</tr>
<tr>
<td>MSc Information Security and Privacy</td>
<td>Specialist</td>
<td>1 Year</td>
<td>3 Years</td>
<td>Pages 14-15</td>
</tr>
<tr>
<td>MSc Computing</td>
<td>Conversion</td>
<td>1 Year</td>
<td>3 Years</td>
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</tr>
<tr>
<td>MSc Computing with Placement *</td>
<td>Conversion</td>
<td>Up to 2 years</td>
<td>Not Available</td>
<td>Pages 16-17</td>
</tr>
<tr>
<td>MSc Computing and IT Management</td>
<td>Conversion</td>
<td>1 Year</td>
<td>3 Years</td>
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<tr>
<td>MSc Computing and IT Management with Placement *</td>
<td>Conversion</td>
<td>Up to 2 years</td>
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<tr>
<td>MSc Computational and Data Journalism</td>
<td>Joint</td>
<td>1 year</td>
<td>Not Available</td>
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<tr>
<td>MSc Data Science and Analytics</td>
<td>Joint</td>
<td>1 year</td>
<td>2-3 Years</td>
<td>Page 19</td>
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<tr>
<td>PhD</td>
<td>Research</td>
<td>Normally 3 years</td>
<td>Not Available</td>
<td>Page 27</td>
</tr>
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</table>

* Our two-year ‘with Placement’ programmes give you the opportunity of gaining 7-12 months professional work experience on a salaried placement (further details on page 11).
An opportunity to put theory into practice and gain valuable real world experience.

Our School is one of only a few in the UK to offer postgraduate work placement opportunities in the field of Computer Science and Informatics.

Professional Placements
To ensure you really stand out from the crowd in the competitive job market, we offer students the valuable opportunity to undertake your master’s degree over two years with a salaried placement.

The aim of our ‘with Placement’ degrees is to provide you with the opportunity to gain valuable work experience as part of your master’s programme. Employers recognise the mutual benefits to be gained by giving students the chance to learn within a working environment before you progress your career.

How does it work?
Your placement will normally last between seven and twelve months, normally taking place at the end of the spring semester in July between the taught elements of the course and your final dissertation, allowing you to practice the new skills you have learned and apply the knowledge you have acquired, in the workplace.

You will return to university following successful completion of your work placement at the start of the summer semester the following year to undertake your individual project and write your dissertation, with the aim of completing the course within 24 months of entry. A further benefit of choosing our placement option is that you will have the opportunity to draw upon the practical real life situations you encounter during your industrial experience and incorporate it into your final dissertation.

Whilst students are responsible for finding their own placements, the School works with our dedicated Placement Officer to ensure you have access to a broad variety of opportunities, and that you receive constant support and guidance throughout the whole process. This will begin with a series of workshops and talks provided before the industrial experience to give advice on applying for a placement and on preparing you to get the most from your placement opportunities.

Overseas placements
If you are an international student, it is possible for work placements to be undertaken overseas, allowing you to carry out your industrial placement in your home country if you are able to secure a suitable position. Suitable overseas placements can also be taken by Home and EU students. As with UK placements, this would be subject to the Board of Studies deeming the placements as suitable. Under current UK BA Tier 4 visa regulations International students can undertake paid work for up to 50% of their visit duration, so students enrolled on the two year programmes ‘with Placement’ will have a valid visa to work in the UK for their placement period. Tuition fees are set at a reduced rate of the maximum full-time tuition fee for students undertaking the work placement.

Further information
Students who are registered on a ‘with Placement’ programme but who are unable to secure a suitable placement within a company, will transfer their registration to the equivalent degree programme without placement and continue their studies in the summer semester by undertaking their individual project, and subject to satisfactory performance will graduate within one year of commencing their studies.

It is expected that students on placement will be paid by the companies or institutions for the duration of the placement.

The School does not guarantee that a placement can be found for all students.

The placement you secure will also need to be deemed suitable by the Board of Studies.

Professional accreditation
Core to the placement will be the ability to demonstrate competency to Level 4 in one or more of the Professional Skills from the Skills Framework for the Information Age (SFIA) framework, the world’s most popular definition of IT skills. During the Placement students will engage in Continuing Professional and Personal Development activities.

The placement therefore provides a strong platform for post-MSc future personal development planning to enable students to continue to develop their skills to Level 5 in the SFIA framework, which is required for Chartered IT Professional Status under the BCS – The Chartered Institute for IT.
This flagship programme offers exposure to state-of-the-art topics that are driving key technological developments and trends.

You can opt for a two-year programme on this course and apply for a paid 7-12 month work placement (see page 11 for further details).

The course

Computer Science is one of the fastest moving academic disciplines, and the outcomes of research and innovation in this field have a massive social impact. The subject spans all aspects of modern life, and this programme offers you the opportunity to apply new skills and advanced techniques to the area of your choice, whilst allowing you to demonstrate that you are at the forefront of your discipline.

This MSc programme will allow you to hone and expand your existing skills whilst demonstrating independent learning through the duration of the course.

Core to this programme is the opportunity to further develop the scope of your problem solving skills by studying advanced programming languages and new programming paradigms. A module in e-commerce and innovation will enhance your transferable skills and employment prospects.

You will choose to study optional research-led modules that allow the freedom to build a distinctive personal portfolio of skills and knowledge. These are structured around advanced topics in the School’s three core research areas: Complex Systems, Data and Knowledge Engineering, and Visual Computing.

During the summer months you will undertake an individual research project and complete a dissertation under the supervision of a number of academic research staff. The topic will be driven by your own interests. 60 credits of the 180 credit programme concern the dissertation and individual supervision.

The programme is delivered in our cutting edge learning facilities, which are consistently voted as among the best in the UK by students.

Successful graduates will be able to demonstrate to employers both a deep understanding and broad knowledge concerning state-of-the-art computer science from a research and development perspective.

Graduates from this course will be ideally placed to pursue a number of careers such as systems architects, programmers and software developers, and will be in a strong position to pursue a research career via doctoral studies.
The subject spans all aspects of modern life, and this programme offers you the opportunity to apply new skills and advanced techniques to the area of your choice.

### MSc Advanced Computer Science Modules

**Key:**  
- A – Autumn  
- S – Spring  
- AS – Both semesters  
- Red box: Compulsory module  
- Blue circle: Optional module

<table>
<thead>
<tr>
<th>Module code</th>
<th>Module title</th>
<th>Semester</th>
<th>Credits</th>
<th>Compulsory / optional</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMT302</td>
<td>E-Commerce and Innovation</td>
<td>AS</td>
<td>20</td>
<td>●</td>
<td>100%</td>
</tr>
<tr>
<td>CMT304</td>
<td>Programming Paradigms</td>
<td>AS</td>
<td>20</td>
<td>●</td>
<td>50% 50%</td>
</tr>
<tr>
<td>CMT104</td>
<td>Information, Networks and Cyber Security</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT105</td>
<td>Security Techniques</td>
<td>A</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT106</td>
<td>High Performance Computing</td>
<td>A</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT107</td>
<td>Visual Computing</td>
<td>A</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT108</td>
<td>Pattern Recognition and Data Mining</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT111</td>
<td>Web and Social Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT202</td>
<td>Distributed and Cloud Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT213</td>
<td>Digital Forensics</td>
<td>A</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT206</td>
<td>Human Centric Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>50% 50%</td>
</tr>
<tr>
<td>CMT209</td>
<td>Informatics</td>
<td>A</td>
<td>20</td>
<td>●</td>
<td>50% 50%</td>
</tr>
<tr>
<td>CMT306</td>
<td>Security, Applications, Identity and Trust</td>
<td>AS</td>
<td>20</td>
<td>●</td>
<td>30% 70%</td>
</tr>
</tbody>
</table>

**Optional module selection**  
- A 40 credits  
- AS 20 credits
A detailed understanding of the key threats and techniques for ensuring security, privacy and trust are fundamental requirements for successful information systems. Professionals in this field are well placed for a wide variety of employment opportunities.

The course
This programme addresses the key security issues that are faced by global communications and information systems. The programme provides a mix of business context with core security, trust and privacy issues that challenge the IT sector. As well as studying themes such as trust and identity and forensic investigation, security techniques and information, network and cyber security, the programme provides an understanding of the e-commerce and business environment. This combined business/security approach provides valuable training for interacting with organisations, and understanding their business functions in a deeper context.

Using case based analysis the programme also gives students the opportunity to learn about forensic approaches to investigation across multiple platforms.

All students will have access to online penetration testing and ethical hacking labs provisioned via a cloud based virtual environment.

This course is recognised by BCS, the Chartered Institute for IT.

Distinctive features

- Practitioner-led modules integrate the latest research ideas with current best practice.
- Students will have access to our Cybersecurity and Forensics laboratory. The 40 PCs are able to host virtual machines and can be used to carry out a number of forensic investigations. They are connected to an isolated, local network which can be configured to better explore the security challenges facing today’s professionals.
- Professionally accredited by the BCS, the Chartered Institute for IT.

Successful graduates will gain skills including:

- An understanding of security theory and practice.
- Use of security techniques for network-based systems.
- Knowledge of the influence of security on business practice and e-commerce.
- Hands-on experience of using security audit, monitoring and assessment tools.
Our Forensics and Cyber Security Lab in which some of your classes will take place

### MSc Information Security and Privacy Modules

**Key:**  
- A – Autumn   
- S – Spring   
- AS – Both semesters  
  - ■ Compulsory module  
  - ● Optional module  

<table>
<thead>
<tr>
<th>Module code</th>
<th>Module title</th>
<th>Semester</th>
<th>Credits</th>
<th>Compulsory / optional</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMT301</td>
<td>Business and IT Management</td>
<td>AS</td>
<td>20</td>
<td>■</td>
<td>100%</td>
</tr>
<tr>
<td>CMT306</td>
<td>Secure Applications, Identity and Trust</td>
<td>AS</td>
<td>20</td>
<td>■</td>
<td>100%</td>
</tr>
<tr>
<td>CMT104</td>
<td>Information, Network and Cyber Security</td>
<td>A</td>
<td>20</td>
<td>■</td>
<td>100%</td>
</tr>
<tr>
<td>CMT105</td>
<td>Security Techniques</td>
<td>A</td>
<td>20</td>
<td>■</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT202</td>
<td>Distributed and Cloud Computing</td>
<td>S</td>
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<td>■</td>
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</tr>
<tr>
<td>CMT213</td>
<td>Digital Forensics</td>
<td>S</td>
<td>20</td>
<td>■</td>
<td>30% 70%</td>
</tr>
</tbody>
</table>
Our MSc Conversion programmes are designed to take graduates from non computing backgrounds who wish to pursue a career in the industry.

MSc Computing
Designed for graduates who want to move into computing from another discipline, this one-year programme attracts students from diverse career and subject areas who wish to be introduced to the skills required for a career in Software Development. The MSc Computing programme provides students with an appropriate balance of the software engineering skills and technical abilities needed to develop effective software and systems. This course is recognised by BCS, the Chartered Institute for IT.

To enhance your CV further you can opt for a two-year programme and apply for a paid 7-12 month work placement (see page 11 for further details).

The course
Through this programme you will get a first hand understanding of the vital problem solving role of software, the interdisciplinary opportunities available and what computational systems can achieve. You will learn, practice and demonstrate the professional skills required by all software engineers, individually or as part of a team, when developing a software solution.

Through a gentle introduction and intensive support, you will be introduced to programming skills using important languages such as Java™ and Python™. The set of compulsory modules is rounded off with a module on e-commerce and innovation aimed at equipping students with an understanding of new business opportunities and how to approach the tasks associated with researching and setting up a high-tech business or social enterprise venture.

A choice of taught optional modules allows you to develop skills in SQL (Structured Query Language) for advanced database functionality using industry standard products such as Oracle™, or to learn about the exciting new area of distributed and cloud computing.

Finally 60 credits of the 180 credit programme concern a dissertation with individual supervision.

MSc Computing and IT Management
Designed for graduates who want to move into computing from another discipline, this one-year programme provides you with a broad technical knowledge and a sound business context for managing IT systems. These are required to meet fundamental IT sector needs such as planning major projects or improving business processes, and are essential for those with aspirations of a management role in the IT sector.

To enhance your CV further you can opt for a two-year programme and apply for a paid 7-12 month professional work placement. (see page 11 for further details).
The course

Through this programme you will get a fundamental understanding of software development and supporting technology relating to programming and database management. You will understand the professional skills required to lead IT managers, individually or as a part of a team, working on business change projects.

With an emphasis on how developing web applications can support business operation and the role of e-commerce, you will understand in detail the dependency between business operations and IT systems. You will be made aware of the challenges in IT management and develop an appreciation of the many factors on which successful IT projects depend.

In addition to being taught industry standard products like ORACLE™, you will have the option of learning about new and emerging technologies, such as cloud computing, that are radically changing the opportunities and threats for the provision of IT systems. You may also opt for human centric computing which focuses on defining and delivering effective information systems from a human centric perspective.

Finally 60 credits of the 180 credit programme concern a dissertation with individual supervision.

MSc Modules

<table>
<thead>
<tr>
<th>Module code</th>
<th>Module title</th>
<th>Semester</th>
<th>Credits</th>
<th>MSc Computing</th>
<th>MSc Computing and IT Management</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>CMT301</td>
<td>Business and IT Management</td>
<td>AS</td>
<td>20</td>
<td>■</td>
<td>■</td>
<td>100%</td>
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<tr>
<td>CMT302</td>
<td>E-Commerce and Innovation</td>
<td>AS</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>100%</td>
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<tr>
<td>CMT303</td>
<td>Software Engineering</td>
<td>AS</td>
<td>20</td>
<td>■</td>
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<tr>
<td>CMT102</td>
<td>Computational Systems</td>
<td>AS</td>
<td>20</td>
<td>●</td>
<td>■</td>
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<tr>
<td>CMT103</td>
<td>Information Processing in Python</td>
<td>A</td>
<td>20</td>
<td>■</td>
<td>■</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT202</td>
<td>Distributed and Cloud Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT205</td>
<td>Object-Oriented Development with Java</td>
<td>S</td>
<td>20</td>
<td>■</td>
<td>■</td>
<td>30% 70%</td>
</tr>
<tr>
<td>CMT206</td>
<td>Human Centric Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>50% 50%</td>
</tr>
<tr>
<td>CMT207</td>
<td>Information Modelling and Database Systems</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>50% 50%</td>
</tr>
<tr>
<td>CMT112</td>
<td>Web Application Development</td>
<td>A</td>
<td>20</td>
<td>■</td>
<td>■</td>
<td>100%</td>
</tr>
<tr>
<td>CMT212</td>
<td>Visual Communication and Information Design</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>100%</td>
</tr>
<tr>
<td>CMT111</td>
<td>Web and Social Computing</td>
<td>S</td>
<td>20</td>
<td>●</td>
<td>■</td>
<td>30% 70%</td>
</tr>
</tbody>
</table>

Optional module selection

<table>
<thead>
<tr>
<th></th>
<th>Semester</th>
<th>Credits</th>
<th>MSc Computing</th>
<th>MSc Computing and IT Management</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional module</td>
<td>A</td>
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<td>N/A</td>
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<tr>
<td>Optional module</td>
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<td>N/A</td>
<td>N/A</td>
<td>20 credits</td>
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<tr>
<td>Optional module</td>
<td>AS</td>
<td>N/A</td>
<td>N/A</td>
<td>20 credits</td>
<td>20 credits</td>
</tr>
</tbody>
</table>
A joint honours degree with the School of Journalism, Media and Cultural Studies.

MSc Computational and Data Journalism

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Course Co-Director
School of Journalism, Media and Cultural Studies
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Phone: +44 (0)29 2087 6183

Dr Martin Chorley (right)
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@compjcdf

MSc Computational and Data Journalism is an innovative new joint honours degree delivered by Cardiff University’s respected and distinguished Schools of Journalism, Media and Cultural Studies and Computer Science and Informatics.

The programme focuses on the development of knowledge and skills through research-informed learning in journalism, data science, computer coding and digital development.

During this one year, full time programme, you will benefit from a combination of lectures, seminars and workshops to develop your skills in an open, discussion driven environment.

You will initially gain a solid foundation in journalism and computing, before specialising in your areas of interest and finally completing a practical and research based dissertation project using the unique skills that you have acquired.

- the perfect foundation for a career at the forefront of digital journalism.
- designed to respond to a shortage in skills reported by employers.

built to develop professional writing and editorial skills.
- delivers specialist training to understand data, coding and web application development.

Who should study this course?
The master’s degree in Computational and Data Journalism provides the perfect vantage point from which to succeed in the world of digital journalist. No previous knowledge of computing is necessary and the programme is open to graduates from any discipline.

This MSc is ideal for recent graduates looking for specialist skills in digital journalism and coding that are proven to be in demand by leading organisations.

- This innovative programme is the first of its kind in the UK and is supported by leading industry bodies such as the Financial Times, the BBC and the Office for National Statistics.
- An exciting guest lecture series will feature leading figures in the world of digital journalism and computing.
- Specialist modules include science reporting, business journalism, crisis reporting, visual communication and information design.

Course structure and modules
The course is structured in three phases – Foundation, Application and Specialisation, Dissertation – in order to support students in the development of skills and knowledge in the key aspects of the course. Each student is appointed a personal tutor to support them during their studies.

Semester 1 – Foundation phase
Core modules:
- Information Processing in Python
- Web Application Development
- Data Journalism
- Reporters and the Reported.

Semester 2 – Application and Specialisation
Core modules:
- Digital Investigation

Optional modules:
- Computing (choose one)
  - Web and Social Computing
  - Human Centric Computing
  - Visual Communication and Information Design
- Journalism (choose two)
  - Reporting Business, Finance and Economics
  - Reporting Health and Science
  - Global Crisis Reporting
  - Managing Print Media in a Digital World
  - Lifestyle and Consumer Journalism
  - Motoring Journalism
  - Business and Financial Journalism
  - Political Reporting
  - Sports Journalism.

Semester 3 – Dissertation project
Taught by experts in Statistics, Operational Research and Computer Science, this new and innovative MSc in Data Science and Analytics will help you develop both the theoretical understanding and practical experience of applying methods drawn from data science and analytics.

You will be equipped with a range of in-demand skills for extracting and handling ‘big data’, discovering and communicating meaningful patterns from the data, and applying modelling tools to help businesses and government organisations make better decisions.

You will study fundamental topics in data science and analytics across both the School of Mathematics and School of Computer Science and Informatics. These will allow you to develop a number of skills appropriate for employment in these sectors or leading on to further study by research including:

- data handling and extraction
- programming
- machine learning and informatics
- problem solving and modelling.

There will be an opportunity for an industrial based 3-month dissertation project, allowing you to gain real-world experience and appreciation, helping you stand out from the crowd when applying for jobs. Some of these will placements will be abroad given our strong international links.

The breadth of knowledge and skills you will be able to demonstrate as a result of this course are suitable for a range of careers where graduates are in particularly high demand.

Course structure and modules
The course is structured in two stages, a taught component and a project dissertation.

We have designed and structured our programmes with both full and part-time students in mind. Full-time students will complete the programme in 12 months, which includes a 3-month dissertation project (this typically will involve working with a company on a real problem of importance to that company).

Part-time students will typically only need to be in the University for lectures and workshops for the equivalent of one day per week over 24 weeks each year. You will usually complete the taught component of the programme over two years with up to a further year to complete the project dissertation.

Core modules:
- Statistical Methods
- Optimisation Methods
- Pattern Recognition and Data Mining
- Dissertation.

And choose one of the following:
- Information Processing in Python
- Informatics
- Web Application Development.

Optional modules (select 40 credits worth):
- Web and Social Computing (20 credits)
- Visual Communication and Information Design (20 credits)
- Distributed and Cloud Computing (20 credits)
- Time Series and Forecasting (10 credits)
- Supply Chain Modelling (10 credits)
- Statistics and Operational Research in Government (10 credits)
- Credit Risk Scoring (10 credits).
You might be wondering what life is like for the 28,000 students at Cardiff University?

Outside of academia you will find a vast range of opportunities to try new things, meet new people and enjoy the exciting atmosphere on campus.

The Students’ Union
- The University’s social life revolves around an organisation called the Students’ Union.
- Every student enrolled at Cardiff University is automatically a member of the Union.
- The Union is run by a committee of students and is dedicated to the social and welfare needs of all students on campus. All profits made go back into improving the services available to you.
- The Union building includes a bar, nightclub, concert venue, shopping mall, cafés and an advice centre.
- The Union runs its own student newspaper, magazine, radio station and television station.

The Lounge
The Lounge is located within the Students’ Union and is open to all, free of charge. It boasts state of the art multimedia stations with Skype and VOIP capabilities, versatile work spaces, modern meeting rooms and touch screen tables giving students access to international channels and games.

Student societies
The best way to make friends is to join a student society. These clubs are very important to student life and are run by other students. There are more than 120 societies, many of which represent areas of the world including: Arabia, China, Malaysia, India, Pakistan, Nigeria and many more.

For two weeks every year the international societies celebrate Go Global – a festival that showcases the University’s diversity involving dance, music and food.

Sport and keeping fit
The University takes sport very seriously, and the Athletic Union runs 60 sports clubs and arranges fixtures against other universities. Almost every popular sport is played at the University and whatever your level you will find an opportunity to play and participate.
Supporting you

The University knows that while you are here you may need some help. You might have an academic question, or you might have a more personal issue.

Cardiff University offers support in many ways:

- Every student is allocated a personal tutor. Your tutor can assist with any academic or personal problems you may have.
- The Student Support Centre has specialist international advisers who can help you with visas, housing, finances and anything which you would like to talk about.
- If you want to talk to someone outside the University, the Students’ Union also has an advice centre.

Orientation for International Students

Before you arrive at the University you may be worried about settling in, making friends and life in the UK. The International Office aims to make your transition as smooth as possible with an induction programme in September and January.

The September induction programme includes:

1. A free collection service from Cardiff and Heathrow airports. International Office staff will provide a warm welcome at the airport and take you and your luggage to your accommodation.
2. Practical information and fairs to help you settle quickly into living and studying in Cardiff.
3. Tours of the University and the city of Cardiff to help you find your way around.
4. Social events and parties including traditional Welsh dancing. These are a great way to make friends.
5. A bank letter service to help you open a bank account when you arrive in the UK.
6. A coach tour of South Wales. Visit some of Wales’ historic monuments with the International Office.

Getting involved at the School

We pride ourselves on our reputation of being a small, inclusive, friendly School, and recognise the importance of giving our students the opportunity to take part in extra activities if they wish. As the majority of our current students and successful graduates say, the more you put in during your time at university and get involved, the more you will get out of your experience with us.

We have a dedicated Teaching Operations Team especially for postgraduate taught students, who are responsible for the day to day management of the master’s programmes. The team organises a series of activities to support you during your time studying with us.

A warm welcome

You will receive information about the School, our programmes and facilities as well as getting an opportunity to meet other master’s students and staff over lunch. During the first weeks of the semester we also run Information Literacy workshops with a Library Specialist to help you effectively search and use high quality references for your master’s studies.

Tell us what you think

We believe that providing suitable feedback mechanisms is crucial to ensure that the best programmes of study are available to our students. The School has a student/staff panel consisting of members of teaching staff and elected student representatives who meet to discuss academic issues. Any issues that you feel need attention can be highlighted to your student representative, who will raise the query with the panel.

Enhance your experience

We organise talks and events that we think will be of interest to you and add even further value to your learning experience with us. These can include inviting former students back to talk about their project experience and give advice for students about to start their projects.

Master’s students are also invited to the regular research talks and seminars organised by the School, which can range from informal discussions between the School’s research groups (see pages 24-26 for further information), to prominent high profile speakers leading a lecture in their field of expertise.

A number of our students also attend talks organised locally by BCS, the Chartered Institute for IT, which the School enjoys strong links with. Our visit days also prove to be popular and have recently included trips to BT’s data centre and the University’s Advanced Research Computing Centre.

Submission

Your master’s programme finishes with a submission party, which is organised to coincide with the Dissertation submission date. This gives you an opportunity to relax over drinks and nibbles with other students and staff, before you finally leave us.
The teaching on our courses will provide you with the practical skills needed to progress your career, whilst talks and networking opportunities with professional guest speakers from our strong corporate connections will give you a real life insight into the industry.

The University also offers numerous services to assist you in fulfilling your career goals.

Student Enterprise:
- This free initiative offers skills development, mentoring events, competitions and business support for students and alumni at Cardiff University.
- It is home to ‘Centerprise’, the Cardiff University Student Business Incubator, which gives you support to grow your business ideas.
- The Careers Service has a dedicated International Students Career Advisor who offers 30 minute appointments and holds workshops on employment regulations and CVs.
- The Careers and Employability Centre is specifically designed to meet student needs and includes an extensive and well-equipped Careers Library with comprehensive information, internet access, computerised guidance programmes and DVD library.

We recognise that students pursue a postgraduate qualification not only to broaden their knowledge, but to get ahead in the workplace, which is why improving your employability is at the heart of everything we do.

David Moore from Wales
Graduate of MSc Computing

“I originally studied Psychology at university but I didn’t want to work in that field, so I ended up working in a call centre. After speaking with colleagues about how frustrating the IT systems we used were, I created a simple program in Excel that would help my colleagues to complete their work more efficiently. The management team were impressed and instantly rolled it out to 1,000 of my colleagues. I realised that I enjoyed finding solutions and it prompted me to study to become a software developer.

Cardiff appealed to me for a number of reasons. Firstly, the campus was conveniently located. Secondly, the School had a track record of taking people from zero to novice developer in under 12 months. Thirdly, the School was known for having close ties with local businesses that would provide opportunities not available at other institutions. Finally, the degree content excited me – there was a broad range of technologies to learn and the ability to shape my own course in the second semester.

Looking back, the most useful resource was the number of companies that came to us to recruit. I ended up working in two job offers. I accepted a position as a graduate developer at True Clarity. We create high-end websites for some of the largest companies in Europe. I have developed rapidly in the role and this is thanks to the MSc course.”

Shada Alsalamah from Saudi Arabia
Graduate of MSc Strategic Information Systems with Information Assurance (now superseded by MSc Information Security and Privacy)

“My experience at Cardiff University helped me gain a number of key skills. Firstly, good written communication skills in English as a second language by writing essays and reports. Second, verbal communication skills through delivering presentations. Third, experience as a team member and a team leader. Fourth, I was able to learn about new tools and methodologies by using reliable electronic resources and books. Finally, the most important skill I gained was self-reliance and working independently, which prepared me well for the doctorate degree I’m currently doing.”

77% of responding graduates between 2014-15 reported to be in employment or further study within 6 months.
Satyam Gupta from India
Graduate of MSc Advanced Computer Science

“Technology has always fascinated me, from 8-bit video games to 64-bit PC Games, and from my first programming line ‘10 REM’ in BASIC to my first Scala object at Cardiff University. After completing my bachelor’s in India, my appetite to learn more about technology brought me here to Cardiff.

Cardiff University gave me more opportunities to learn both practically and theoretically over other British universities. The labs are equipped with the latest gadgets and software, giving students unrestricted access to the latest technologies in labs throughout the campus.

The staff members are highly qualified in their field of expertise and are always willing to help you. The professors do research in collaboration with highly reputed firms worldwide. As a student you get chance to learn about these multi-national companies and their projects through guest lectures and seminars.

Cardiff University recognizes all international students just like other home students. Pursuing a master’s has given me the opportunity to meet new people from different parts of the world, gain a better insight into how things work in the commercial world, and helped me to shape my future as a software engineer.”

Simeon Ivanov from India
Graduate of MSc Computing and IT Management

“The MSc in Computing and IT Management appealed to me because it offered contemporary skills such as Cloud computing, e-commerce and databases, and it had a project management component. The degree is also suitable for students who do not have a first degree in IT, which was perfect for me as my first degree was Business Studies.

I really enjoyed networking with other students – the group work sessions enabled me to find new friends, who shared my interests in programming.

The high-quality teaching is another highlight – most of the lecturers have very good experience in industry. In the Cloud computing tutorials we were deploying live Linux virtual servers based in a data centre.

After completing my exams, I received a job offer from one of the largest IT companies worldwide. My job involves using the skills I gained during my degree, including the use of JavaScript, as well as software development.

I really wanted to start a career in IT and completing an MSc in Computing and IT Management enabled me to achieve this goal. If you are interested in computing, IT, or want a great career, the School of Computer Science and Informatics is the right first step.”

Recent graduates from the School’s MSc degrees have taken jobs with such high profile organisations as Logica CMG, Corus and Accelero Digital Solutions, or have progressed to other universities to gain employment or continue research.
Research in computer science and informatics is all about going beyond current knowledge and technologies to build the computing systems of the future.

Technologies we now take for granted, like the web, smartphones, and databases, are all products of past research in computer science and informatics.

So what will the future bring?

Researchers here at Cardiff are currently working on new developments in areas like computer graphics, data mining, and 'intelligent' mobile systems. We hope that our research will enable new kinds of computing applications, products, and systems to help people in areas like healthcare, the environment, security and business. Conducting research in computer science and informatics is exciting and challenging - and we hope that reading these pages will make you want to find out more.

Research in the School is organised into three Research Groups. Each one is led by a distinguished professor and is made up of academic staff, research assistants, and postgraduate research students. The groups provide a ‘home’ for researchers, allowing them to exchange ideas, get support, and often work together on projects. All postgraduate research students are expected to participate in their group, for example by giving presentations on their own research, or giving feedback to fellow students and other group members. Over the course of their studies, postgraduate research students will normally publish a number of papers that will help them work towards their thesis.

To be successful, these papers will contain new ideas and research results that will go beyond current knowledge in computer science and informatics. The student’s supervisors will help them develop these ideas and get their results. The other members of the student’s research group will help them communicate and improve their ideas and results.

In addition to the research groups, we have created seven research priority areas for the School to focus on emerging trends within our rapidly-evolving discipline.

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

Priority areas will remain dynamic, and get reviewed approximately every two years as priorities change.

They currently include:

- 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.

Complex Systems

School research in areas related to large scale systems, data analytics at scale, multi-criteria optimization and human/social computation. Our research spans four key themes:

(i) cybersecurity
(ii) social and mobile computing
(iii) parallel and distributed systems
(iv) multi-criteria optimization and mathematical modelling.

Underpinning these key areas are issues of scale and complexity, with a particular emphasis on human/systems interaction. Most of the research is carried out in collaboration with colleagues internationally (in Europe, US, Singapore and Australia).

Our cybersecurity work covers aspects of information and mobile data security and location privacy, cyber risk in online social networks (e.g. malware propagation and analysis), security of industrial control systems (e.g. SCADA systems) and Cloud security. This aspect of our work links in with a number of other Schools at Cardiff University – such as Social Sciences, Mathematics and the Business School.

Our work in mobile and social computation covers aspects of machine classification and statistical modelling of online social behaviour, understanding human personality, studying interaction with smart phones, and data science-based approaches for assessing risk to human safety.

This work has links with other Schools at Cardiff University – such as Social Sciences and Psychology. Our parallel and distributed systems work focuses on high performance and distributed systems, covering various aspects of large-scale distributed systems management and performance analysis (such as Edge and Social Clouds), personal
Dr. Gualtiero Colombo

Dr. Colombo completed his PhD on ‘A decomposition approach for the Frequency Assignment Problem’ and he now works as a Research Associate for Cardiff University.

During my PhD I applied novel solutions to solve large instances of the frequency assignment problem. This is a complex problem of great importance to radio-communication that cannot be solved exactly for large-scale problems that occur in practice. The combined application of heuristics methods and partitioning techniques were able to provide very good performance on a time and quality scale.

Subsequently I have been involved as a researcher in two European projects in the area of mobile and social computing. One of my main research contributions concerns the exploration and exploitation of social networks for the delivery and acquisition of content in a mobile pervasive environment, focusing on issues such as cooperation and trust. I am currently involved in a research project investigating new approaches for embedding self-awareness in ICT systems, based on human cognition inspired techniques.

Diego Pizzocaro

Diego completed his PhD in collaboration between Cardiff University and IBM. He is now co-founder of a startup company in Italy.

In my PhD, I studied the problem of how best to assign sensors to help users in emergency response situations. When major emergencies like the Japanese earthquake happen today, there are many kinds of sensors that can help get vital information to users such as rescuers, firefighters, and medical teams. Sensors can be simple phone cameras, specialist devices like radiation detectors, or complex systems like drone aircraft. The problem I studied in my PhD is how to choose the best sensors where different users have different needs, and there may not be enough sensors to satisfy every user. This is a hard problem to solve in real-time. I designed an ‘intelligent’ algorithm that can run on a smartphone and cope with rapidly-changing situations.

Recent graduates from the group have gone on to positions in industry (e.g. Airbus Group), government positions (e.g. Office for National Statistics) and university faculty positions.

Group members’ interests in distributed intelligent systems include:

- context-aware decision support
- sensor informatics
- heterogeneous information management using ontological approaches.

Data Knowledge and Engineering

School research in the field of data and knowledge engineering specialises primarily in:

- knowledge representation and reasoning
- machine learning and data mining
- mobile and spatial informatics.

Our research is embedded in a variety of application domains, where we work closely with end-users. We develop novel techniques for capturing, modelling and processing information, to support knowledgeable decision-making.

Our expertise spans several core areas of artificial intelligence and informatics, including knowledge representation and reasoning, machine learning and data mining, and distributed intelligent systems.

The group’s research in knowledge representation and reasoning addresses a variety of formalisms, including logics of argumentation and non-monotonic reasoning, lexically-informed logics, and controlled natural language.

Our strengths in machine learning include text analytics, natural language processing, and privacy-protection in data mining.

Group members’ interests in distributed intelligent systems include:

- context-aware decision support
- sensor informatics
- heterogeneous information management using ontological approaches.
Visual Computing

Visual computing covers computer vision, computer graphics, geometric computing and both image and video processing. There are many applications in this area, and much of our work is inter-disciplinary. The group has had collaborations with the Schools of Engineering, Psychology, Dentistry, Optometry and Earth Sciences.

The group has attracted top quality international researchers as staff, and collaborations include: University of Cambridge, University of Oxford, Harvard University, University of Southern California, Tsinghua University, Peking University, Seoul National University, Korea University, Aachen University. Industrial links exist with Delcam, Royal Mint, Renishaw, Unigraphics, Airbus, General Dynamics, and QinetiQ.

Recent graduates from the group have gone on to positions in industry (e.g. Airbus Group), government positions (e.g. Office for National Statistics) and university faculty positions.

Some examples of major research themes covered by the group are:

- Reverse engineering of CAD models, i.e. regenerating CAD models from scan data. One of the group’s papers on this topic has been cited more than 1000 times.
- 3D triangle mesh processing, in which algorithms have been developed for manipulating and improving the quality of meshes by noise filtering, segmentation, morphing, texture transfer, parameterization, watermarking and remeshing.
- Face analysis, in which both static and video sequences of both 2D and 3D data are analysed to develop biometric (recognition) systems and also build perceptual models and stimuli that have then been applied within psychological experiments.
- The group is working on controlling, modelling, simulating and identifying quantum systems for applications in nano-electronics, photonics, quantum computing, quantum networks, and medical applications.
- The group is participating in the INSIST EU Marie Curie International Training Network involving. Its objective is the development of the next generation design/simulation methods based on isogeometric analysis.

Examples of active specific research topics within the group are:

- Human motion analysis
- Image and 3D shape retrieval
- Point-based modelling
- Reverse engineering of solid shape
- Solid, curve and surface modelling
- Characterisations and analysis of shape
- Finite element meshing
- Visualisation and analysis of sports data
- Image registration
- Non-photorealistic rendering
- Cellular automata
- 3D model segmentation
- Data/information fusion
- Quantum engineering
- Human perception and vision space rendering
- Optimal route and reaction design for chemical synthesis (member of the Dial-A-Molecule EPSRC network).

“During my PhD I investigated the problem of sampling, within the field of Visual Computing. Sampling is a hugely important problem in Computer Science, but more specifically, I considered how to optimally sample 3D models for rendering and mathematical simulations. High quality sampling allows for the simplification of complex models, whilst preserving important features. Simplified models speed up rendering, transmission, and search algorithms, and reduce storage costs. Our solution involved the development of algorithms to reduce the dimensionality of the 3D models, thus reducing the difficulty of the sampling problem.”
PhD

PhD study at Cardiff follows three year programmes which aim to provide you with the ability to produce original, novel and significant research findings in your chosen area. We welcome applications with proposals related to any of our research areas.

Although individual PhD projects can follow diverse paths, they generally have a common overall structure. Usually your first year involves an in-depth review of literature and preliminary investigations to develop and refine your research plan. By your second year you should have formulated a clear problem or hypothesis to study, and can plan an appropriate approach to demonstrate your theory. Typically your final year is spent producing experimental results to validate your proposed approach and writing your thesis, which you will defend in a viva.

Each student in the School is guided by supervisors with relevant interests and expertise that is internationally recognised in their field. Annual poster and presentation events for our PhD students allow you to develop your presentation skills and gain valuable feedback on your work, and we encourage and support your participation in national and international conferences over the course of your study. Throughout your PhD you are given the opportunity to develop your technical, communication and project management skills via a range of available taught courses. The School has an excellent environment for postgraduate students, with well-equipped modern laboratories and a vibrant community of students, both academically and socially.

At the end of your PhD programme, you will have demonstrated your ability as an independent researcher, and will be ideally prepared to pursue a career in academia or industry.

The Doctoral Academy

★ University-wide approach to ensure a coordinated approach to doctoral study.
★ A central source for doctoral students to access a comprehensive range of workshops and support to progress their project and develop their careers.
★ Regular cross-School activities enable a network of researchers and a stimulating research environment.
★ Annual student-led conferences and other research showcase events.
★ Guest speakers such as Jorge Cham, creator of ‘PhD Comics.’

380 workshops covering 190 topics per year
£10,000 per annum awarded to researcher-led activities
(above figures based on 2015/16 session)
International Students (Non-EU Countries)

As an international student, you have access to a personal and dedicated service from the International Office to help with your application and make the transition to studying at Cardiff.

Supporting International Students
The University has a long tradition of welcoming international students and prides itself on providing a supportive environment. Some of the benefits for international students studying include:

▶ Guaranteed accommodation
Cardiff is one of the few universities that guarantees accommodation to single international students for the duration of your course, as long as you apply through the normal admissions cycle and appropriate allocations process. The accommodation is in a variety of high quality student residences which are close to campus.

▶ Help before you arrive
The International Office will send you detailed information on how to apply for your visa, travelling to Cardiff and the other necessary arrangements you will need to make to prepare for studying in the UK.

▶ The induction programme
In September and January each year, the International Office organises a comprehensive orientation programme for new students. In September this includes free collection from Cardiff and Heathrow (London) airports.

▶ International student advisors
In addition to the support provided by your School, the University has specially trained international student advisors to provide you with assistance on any issues including visas and finances.

▶ International student societies
The Students’ Union is home to more than 20 international student societies. The societies run social and cultural events and organise the annual Go Global international culture festival. There is also space within the Students’ Union for students to meet and relax.

▶ International careers advice
The University’s Careers Service has a Careers Consultant for International Students, and provides resources to help you research career paths and opportunities.

Meet the International Office in your Country
Staff from the International Office also travel to more than 30 countries each year so you can meet University staff and discuss your study options in person. Visit our web pages for international students and select your country for details of where we are travelling to and to sign up to receive notifications of visits.

English Language Support
Our English Language Programmes are available to full-time International and EU (non-UK) students studying or intending to study at Cardiff University. Language and Skills courses are offered throughout the year and last from eight weeks to nine months. They are designed to improve your general and academic English.

Applying to Cardiff University as an International Student
To apply to Cardiff as an international student you follow the standard procedure as outlined on page 32. You do, however, have access to additional support from the International Office.

Further Information:
Tel: +44 (0)29 2087 4432
Email: international@cardiff.ac.uk
Skype: cardiffuni_international
Facebook: cardiffinternational
Web: www.cardiff.ac.uk/international
English Language Programmes

Our courses help students improve their general English language skills, as well as develop the specific skills needed for British academic study. Cardiff University is also an official British Council IELTS Test centre.

Summer Pre-Sessional Programme in English for Academic Purposes

These full-time courses of 8, 10 or 12 weeks are designed to prepare you for academic study at Cardiff University. They combine intensive English language tuition with advice and practical exercises on academic study skills. You learn techniques for listening and note-taking in lectures, discussing ideas and expressing opinions in seminars, succeeding in exams and producing good written work. These full-time, intensive English language courses are for international students with an IELTS scores of either 5.5, 6.0 or 6.5 and who hold an offer to study with us. If you successfully complete your relevant pre-sessional course, there is no need to retake an IELTS test.

The English for University Study Programme: an Academic English Language and Study Skills course

This academic-year programme is designed to prepare students for study at a UK university. It is a full-time English language and study skills course with entry points in September (9-month course), January (6-month course) and April/May (2-month course). Each entry point has a minimum entry requirement of IELTS 4.0, 4.5 and 5.0 respectively.

The programme is suitable for students who have applied for, or are planning to apply for, a postgraduate taught or research degree in the UK. The programme aims to improve students’ English, allowing them to reach the appropriate level for their chosen academic course, and to give them the study skills to function successfully within their academic school. It is designed to improve English language ability, increase knowledge of academic conventions and provide a smooth progression from English language improvement to academic study.

The programme aims to provide students with a balance of the following elements:

- An opportunity to improve their general English skills
- The necessary exam techniques to achieve the results needed to enter their Academic School
- The academic study skills required for successful study in their Academic School.

In-Sessional Programme: Support Classes in Academic English and Study Skills

Working and studying at an English-speaking university can be very demanding. Once you are enrolled as a full fee-paying international student at Cardiff University, you can select from a range of free and optional English language support classes. You can choose courses to suit your individual needs and, as the courses run part-time, you can fit language development around your university study. As well as developing your reading, writing, speaking and listening skills, the courses help you with academic writing, examination techniques, listening and speaking, pronunciation, note-taking and seminar skills.

There are also regular writing clinics and workshops. Some schools have their own programmes of academic study skills for international students, specifically developed to meet the needs of a particular course or subject area.

Additional information

We offer small and friendly classes, with a maximum of 14 students. You will find the teaching material is relevant and applicable to life in Britain today. We have well-qualified and experienced staff, who will offer you regular feedback, support and advice to make sure that your individual language needs are addressed.

More online at:
Web: www.cardiff.ac.uk/elt
Securing funding for postgraduate study is an important consideration for most students. Most funding sources are highly competitive and are subject to various application deadlines.

In most cases, you will need to have received an offer of a place to study in order to obtain financial support, so an early university application is advisable.

Tuition Fees
Tuition fees vary depending on the course you decide to study and whether you are classified as a home, EU or international student. You should check our course listing online for detailed fee information for your course.

To make it easier to manage your finances you can pay in three instalments each year.

Postgraduate Studentships
Each year Cardiff University offers a wide range of funded, competitive studentships. Funding sources for these studentships include awards made by individual Academic Schools, the UK Research Councils, collaborations with charities and trusts, industry and businesses, government departments and other bodies.

Studentships become available throughout the year and are published on our website when they become available. There is no uniform application deadline and you are encouraged to follow us on Facebook or Twitter for the latest funding opportunities or sign up to our funding email newsletter.

Awards can range in value from partial funding to full tuition fee support and a stipend to cover living costs. You should check your eligibility for specific studentships carefully; some are restricted to UK/EU applicants and others are open to non-EU applicants.

Funding for International Postgraduates
The highly prestigious International Scholarship Fund is designed to attract and reward the most deserving and exceptional students to the University. A range of Postgraduate scholarships and bursaries are available. We also advise international students to investigate funding opportunities offered by their own country, and to check with the British Council.

Cardiff University is a participating institution in the US Government Federal Family Education Loan Programme (FFELP). US students seeking Federal Stafford Loans for overseas study can study at Cardiff University.
PhD Scholarship in Computer Science and Informatics

Each year the School is normally able to offer a number of full-time 3 year PhD Scholarships in Computer Science and Informatics in one of the School’s research areas. These scholarships will cover tuition fees (at the home fee rate) and include a stipend for living expenses. These scholarships also include provision of equipment, and funds attendance at suitable, prestigious UK and overseas conferences during the three years of study.

You should check our website to see what PhD Scholarships are available for your preferred point of entry.

Charities, Foundations and Trusts

There are many charities, foundations and trusts that may contribute to your study costs. You will need to apply to these individually and often after having received an offer to study. Many of these are listed in publications such as The Grants Register, the Directory of Grant Making Trusts and the Graduate Prospects Postgraduate Funding Guide.

Loans

Professional and Career Development Loans are the most common loans for vocational postgraduate degrees, but are only available to UK and EU students who have lived in the UK for at least three years before the course starts and plan to work in the UK, EU or European Economic Area (EEA) after the course.

The loan is a deferred repayment bank loan to support further education or training that is interest free up to one month after the end of your course when you start repaying it with interest. You can borrow between £300 and £10,000.

You should apply for your loan up to three months before your course starts.

Cardiff University’s Learning Provider Number is 8655.

UK Government postgraduate loans

English residents may apply for a UK government postgraduate loan of up to £10,000 for your degree at Cardiff University.

Available for full-time, part-time and distance learning postgraduate master’s degrees across all subject areas.

Programme and personal eligibility criteria apply, please see our website for details.

A postgraduate loan scheme for Welsh residents has not yet been announced.

Working alongside full-time study

If you intend to undertake some paid employment while pursuing full-time study, one option is to register with the Unistaff Jobshop. The Jobshop is run by the Students’ Union, and features casual employment opportunities in the University and surrounding area.

Most international students can work up to 20 hours during term-time and full time during the holidays. The University does not recommend you work the full 20 hours during the term because studying in the UK is intensive and you will need to make sure you have enough time to complete all your coursework and reading.
Admissions criteria
For our specialist degrees, we welcome applications from computer literate graduates who have a good honours degree, or equivalent professional qualification in a subject such as Computer Science or a related subject. Our conversion and joint honours degrees require no previous experience of studying computer science. We are always pleased to consider suitably qualified international applicants.

If your first language is not English you must provide evidence of competence in English. Our standard requirement is an overall IELTS score of 6.5 with no area less than 5.5. The University offers English language courses that can help you achieve this.

We are committed to providing equal opportunities and welcome applications from all sections of the community.

Application procedure postgraduate taught / master’s degrees
Programmes start in September each year but applications are considered as they arrive throughout the year. You apply directly to the University for a postgraduate taught course or apply online.

Please feel free to supplement your application with a detailed CV or any other supporting material you may consider to be appropriate.

If you have any questions about the course or the application process please contact the Admissions Tutor, comsc-pg@cs.cardiff.ac.uk

Application procedure postgraduate research (PhD / MPhil)
The application procedure for postgraduate research is the same as postgraduate taught (above), however you will also need to include a research proposal. You should also make contact with a member of academic staff who could act as a potential supervisor to your studies.

To do this:
1. look at our website to see if there is a member of academic staff who matches your area of research.
2. send the member of staff a short e-mail outlining your area of interest.
3. mention on your application form which member(s) of staff you have contacted regarding your supervision.

If you are unsure whether we are able to offer supervision for your research you can contact us directly: comsc-pgresearch@cs.cardiff.ac.uk

International students
The University recognises qualifications from all over the world. To know if you would be considered for entry you can:

- look on the website. We have a dedicated section for many countries. This will give you an overview of qualifications we consider.
- contact the International Office.
- contact an educational adviser. The University has an international network of educational advisers (agents) who give free advice (see the website for more details).

To apply to us as an international student you follow the standard procedure. You do, however, have access to additional support as detailed on page 28.
How to find us

The School of Computer Science and Informatics shares the £35 million Queen’s Building complex with the School of Physics and Astronomy and the School of Engineering. The Queen’s Building is located just off Newport Road at the centre of Cardiff; a short walk from Queen Street railway station and the city’s main shopping and entertainment area.