COMPUTER
SCIENCE
Canterbury
ACADEMIC EXCELLENCE AND INSPIRATIONAL TEACHING

Kent is one of the UK’s leading universities, ranked 16th in The Guardian University Guide 2016. In the Research Excellence Framework (REF) 2014, Kent is ranked 17th* for research intensity, outperforming 11 of the 24 Russell Group universities.

The School of Computing is an internationally recognised Centre of Excellence for programming education and has won awards for its Java teaching. Within the School are authors of widely used textbooks, two National Teaching Fellows and two Association of Computer Machinery (ACM) award-winning scientists.

The University is recognised as an Academic Centre of Excellence in Cyber Security Research by the Engineering and Physical Sciences Research Council (EPSRC) and GCHQ, the Government Communications Headquarters.

World-leading research

Our programmes are taught by leading researchers who are experts in their fields. You get a chance to study subjects in areas such as artificial intelligence, computer security, parallel systems, bio-inspired computing and mobile computing. In the Research Excellence Framework (REF) 2014, Computer Science and informatics at Kent was ranked 12th in the UK for research intensity, outperforming 13 of 23 Russell Group universities.

Teaching excellence

Kent has developed two leading object-oriented teaching environments for the Java programming language – BlueJ and Greenfoot. BlueJ, which is designed for university-level learners, has been used in over 1,000 institutions across the world, and has proved popular with our own students. Greenfoot is for school-level learners and has won an industry award. Our staff have also written internationally acclaimed textbooks for learning programming, which have been translated into eight languages and are used worldwide.

The School of Computing has been awarded the status of Centre of Excellence in Object-Oriented Programming and all of our courses also offer professional accreditation by the British Computer Society.

Two of our staff have received the SIGCSE Award for an Outstanding Contribution to Computer Science Education. The award is made by ACM, the world’s largest educational and scientific computing society.

* of 122 universities, not including specialist institutions
Wide-ranging courses
We offer a wide variety of degree programmes ranging from the more technical Computer Science courses through to joint honours degrees, combining computing with another subject. It is possible to switch between closely related programmes in the early parts of your course.

Within your degree, there is a wide range of modules. The first language you learn is Java, the standard programming language for many mobile devices and widely used in industry. You can also learn other languages such as Erlang.

Other areas covered include software engineering, networking technology and human-computer interaction. You learn how to develop software, program mobile devices and discover the underlying protocols on which the internet runs.

A global outlook
Kent has a reputation as the UK’s European university and has developed international partnerships with a number of prestigious institutions. We have an international community on campus: 38% of our academics come from outside the UK and our students represent 149 different nationalities.

EMPLOYABILITY

A successful future
Our students go on to be very successful in the job market – with at least 94% of our students in employment six months after graduation. We ensure our students are equipped with the skills and knowledge that make them highly attractive to potential employers. The high employment levels and well above average starting salaries of our graduates are testament to our success in achieving this.

We focus on courses that provide skills relevant to employers with a good balance between theoretical studies and real-life applications. We also give our students the chance to gain valuable work experience.

As well as providing a first-rate academic experience, we want you to be in a good position to face the demands of a changing economic environment. During your studies, you develop key transferable skills considered essential for a successful career. For more information on the careers help we provide at Kent, please go to p8 or visit www.kent.ac.uk/employability

Graduates from all programmes enjoy above average starting salaries compared with students on similar programmes at other universities. In 2014 the average salary for a Computer Science with a Year in Industry graduate was £30,000 after six months. The national average was £24,000.

Industrial experience
During your degree, you can gain work experience with leading companies in the UK and overseas as part of a Year in Industry; staff in the School’s placement office provide support in both finding and securing placements. This experience means that after graduation many of our students go on to work for world-class businesses. The School of Computing can also provide you with commercial experience working as a student consultant within the Kent IT Consultancy (KITC) and teaching experience in the Computing in the Classroom module.

Wide-ranging courses
We offer a wide variety of degree programmes ranging from the more technical Computer Science courses through to joint honours degrees, combining computing with another subject. It is possible to switch between closely related programmes in the early parts of your course.

Within your degree, there is a wide range of modules. The first language you learn is Java, the standard programming language for many mobile devices and widely used in industry. You can also learn other languages such as Erlang.

Other areas covered include software engineering, networking technology and human-computer interaction. You learn how to develop software, program mobile devices and discover the underlying protocols on which the internet runs.

A global outlook
Kent has a reputation as the UK’s European university and has developed international partnerships with a number of prestigious institutions. We have an international community on campus: 38% of our academics come from outside the UK and our students represent 149 different nationalities.

EMPLOYABILITY

A successful future
Our students go on to be very successful in the job market – with at least 94% of our students in employment six months after graduation. We ensure our students are equipped with the skills and knowledge that make them highly attractive to potential employers. The high employment levels and well above average starting salaries of our graduates are testament to our success in achieving this.

We focus on courses that provide skills relevant to employers with a good balance between theoretical studies and real-life applications. We also give our students the chance to gain valuable work experience.

As well as providing a first-rate academic experience, we want you to be in a good position to face the demands of a changing economic environment. During your studies, you develop key transferable skills considered essential for a successful career. For more information on the careers help we provide at Kent, please go to p8 or visit www.kent.ac.uk/employability

Graduates from all programmes enjoy above average starting salaries compared with students on similar programmes at other universities. In 2014 the average salary for a Computer Science with a Year in Industry graduate was £30,000 after six months. The national average was £24,000.

Industrial experience
During your degree, you can gain work experience with leading companies in the UK and overseas as part of a Year in Industry; staff in the School’s placement office provide support in both finding and securing placements. This experience means that after graduation many of our students go on to work for world-class businesses. The School of Computing can also provide you with commercial experience working as a student consultant within the Kent IT Consultancy (KITC) and teaching experience in the Computing in the Classroom module.
Scholarships at Kent are awarded on academic, sporting and musical merit. For details see www.kent.ac.uk/scholarships/undergraduate
SUPERB STUDENT EXPERIENCE

Our campus at Canterbury provides a stunning location for your studies. Kent is also one of the best-equipped universities in the country.

Excellent computing facilities
At Canterbury, we have over 1,000 public computers for student use, many available 24 hours a day. All study bedrooms have free connections to the University network and the internet, and include free access to digital TV channels online (a TV licence is required), and access to telephone services for making cheap or free calls over the internet. Free wireless access points are also widely available across campus, enabling you to choose where and when you work. Course materials for all our modules are web-based and you can access these on campus or from home.

Makerspace – The Shed
The School of Computing’s Makerspace, known as ‘The Shed’, has 3D printers and laser cutters and development equipment such as the Oculus Rift and Raspberry Pi. It supports new kinds of innovative teaching and learning, taking advantage of the increasing accessibility of electronics and engineering with a rapid prototyping capability. Students and staff can use The Shed not only to build physical devices for taught modules, but also to support and develop their own personal interests and hobbies.

Excellent study support
We provide excellent support for you throughout your time at Kent. This includes access to web-based information systems, podcasts and web forums for students who can benefit from extra help. We use innovative teaching methodologies, including BlueJ and LEGO® Mindstorms for teaching Java programming. The library has extensive print and electronic collections. Our electronic resources are available online and can be used remotely as well as on campus.

Green and friendly campus
Our campus is set in a superb location on a hill overlooking Canterbury and the Cathedral. Built on 300 acres of parkland, it is surrounded by green open spaces, fields and woods. Everything you need on campus is within walking distance: the Gulbenkian Theatre and Cinema, the Colyer-Fergusson concert hall, the library, the medical centre and pharmacy, the campus shop and bookshop, banks and cashpoints, café, bistro, bars, nightclub and launderettes. Our extensive sports facilities include a gym and cardio theatre, climbing wall, squash courts, a 3G artificial football pitch and a sports pavilion.

Kent is a friendly and supportive university with a cosmopolitan atmosphere and a diverse mix of people, with students representing 149 nationalities.

Attractive location
Canterbury city centre is a 25-minute walk or short bus-ride away from the campus, with its medieval buildings, lively bars, pubs, restaurants and cafés, and a wide range of shops. The seaside town of Whitstable and beautiful countryside of the North Downs Way is close by. London is under an hour away by train.
Sey Kuyinu is in the third year of her degree, studying Computer Science with a Year in Industry.

Why did you choose Kent?
I am an international student, from South Africa. My parents have friends who have studied in the UK and, when they were asking around, Kent was mentioned as it has a good reputation. When I was in the UK on holiday, I came to visit and really liked the campus.

How is your course going?
It’s going well. The first couple of years provides a good foundation in computer science, which I realised once I did my year in industry. In your first and second year you do a lot of Java programming, and in the second year we learnt how to use other programs, it was fun to learn something completely new. I’m looking forward to the computer graphics and animation module, it should be fun; it’s something I’ve always been interested in.

How did you enjoy your year in industry?
I worked at Goldman Sachs and thoroughly enjoyed it. It was a really good learning experience and I could put everything I’d learnt in my first two years of my course into practise. I also realised that there was so much more to learn. My team was very helpful throughout the whole year. It was also a hardworking environment, I was constantly pushed out of my comfort zone, which has helped me a lot.

What kind of career do you hope to follow when you graduate, and why?
The experience I’ve gained during my year in industry is priceless. It has allowed me to understand what I like and what I don’t like, and the skills I need to work on. I enjoy programming but I also have an interest in business and finance, so I’m exploring roles that combine finance and software development, similar to what I did during my year in industry. I now feel confident about what I have done and that I can sell myself at an interview. It has also given me an idea of what my future career could look like.

What is the level of support like in your studies?
The lecturers are always open to you going to see them if you have any questions, for one-on-one support or asking them to explain something you may not have understood in lectures. There is also an element of peer-to-peer support. The second year does get quite busy, we had a lot of deadlines, but there’s a good team spirit, everyone helps each other. You work long hours some days but you’re doing it together, which helps.

What is the accommodation on campus like?
I lived in Park Wood and I loved it! In particular because although it’s still on campus you feel that you get to leave things behind. I shared a house with a nice mix of people who were on different courses to me. I got to learn about different cultures, and made some really good friends.

How would you describe your fellow students?
We are all very different, computer science is so broad, a lot of us have different interests. Everyone’s hardworking and we encourage each other to do better.

What are the facilities like on campus?
They are very good, especially in the first year when you are living on campus – there’s hardly any need to go into the city for the first few weeks. There’s good access to computer rooms and the library has good study spaces. It is open 24/7, which is especially helpful during exam time… it’s good to have that option should you need it! My favourite restaurant on campus is Origins, but they’re all really good!

What do you do in your spare time?
I play netball and have done volunteering work with a church group that puts on activities for children aged from five to 11. Getting involved is a good way to get to know other people. I also work part time, so that keeps me busy.

Any advice to students coming to Kent?
The years will fly by, so make the most of it. Work hard because if you work hard you will do well.
Kent equips you with essential skills to give you a competitive advantage when it comes to getting a job. In 2014, less than 6% of Kent graduates were without a job or a further study opportunity six months after graduation.

Our Computer Science graduates have launched their careers in many different sectors including finance and insurance, technology and IT, commerce, engineering, education, government and health.

Possible careers include:
- software engineering
- applications programming
- mobile applications development
- project management
- systems analysis
- consultancy
- networking
- research and development
- web design and e-commerce
- teaching and lecturing.

What do employers think?
Our high graduate employment rate speaks for itself. Leading companies, such as BAE Systems, Cisco, IBM, The Walt Disney Company, CitiGroup and BT, are keen to employ our graduates. Many employers who provide placements for our year in industry students choose to offer them permanent jobs after graduation. This is a clear indication that employers are impressed with the calibre of our undergraduate students.

Work experience
Employers are very keen to employ graduates who already have work experience. Choosing to spend a year in industry can provide you with real commercial experience with leading companies in the UK, including Accenture, BT, Lilly, IBM, Microsoft, Morgan Stanley and Warner Bros, or overseas with our placement partners in California and Hong Kong. Valuable consultancy skills can also be gained by choosing to work in the Kent IT Consultancy (KITC). Our consultancy modules allow you to gain academic credits while working on commercial projects with local companies. Students interested in a teaching career may be interested in the Computing in the Classroom module, which gives students the opportunity to apply their knowledge in a school setting.

Key skills
Studying for a degree is not just about mastering your subject area. These days employers are also looking for a range of key skills, and we encourage you to develop these within your degree programme. The ability to analyse situations, troubleshoot problems, and construct written and verbal presentations are all valuable skills, no matter what your final profession.

Our graduates enjoy higher than average starting salaries, for more details see p3.

Careers advice
The University of Kent’s award-winning Careers and Employability Service can give you advice on how to choose your future career, how to apply for jobs, how to write a good CV and how to perform well in interviews and aptitude tests. It also provides up-to-date information on opportunities before and after you graduate. For more details, see www.kent.ac.uk/employability
Paul Wozniak graduated from Kent in 2013 with a First in Computer Science with a Year in Industry. He is now working at LoopUp in San Francisco.

Why did you choose to study at Kent?
The Computer Science programme at Kent comes with the option to take a year in industry. Having spoken with the staff and after seeing the stats, it became apparent that it was a huge opportunity to gain real-life experience in the field, travel abroad and most likely secure a job offer at the end of the degree. The Year in Industry programme is put together extremely well and meticulously executed by the dedicated team in the School of Computing. A year after graduating, I am absolutely convinced that no other university in the country can offer an opportunity to match.

What was it that attracted you to the degree programme?
After seeing the structure of the programme, which consisted of a balance of theoretical as well as practical modules, it became obvious that a lot of thought had gone into putting it together. There was a clear line of progression from the first to the final year. The coursework for most of the modules looked like a lot of fun and the idea of doing a group final-year project was very appealing.

How would you describe the teaching at Kent?
The lecturers are enthusiastic about what they teach and are very open to engaging in a discussion about the content. This two-way dialogue made the lectures and seminars fun and memorable. It was easy to solicit additional feedback about my work. Some seminars were taught by senior students, which provided a relaxed and laid back atmosphere which I particularly looked forward to.

How did the skills you gained at Kent help you in your present career?
There was good proportion of group work throughout the programme. A lot of the coursework was completed as a group and even for the individual pieces, I found myself collaborating with others. We often discussed the problems and analysed them, which resulted in a better understanding. All of the group work done throughout the course led to the group final-year project. This project has become a prompt and model for how I carry out projects every day in my professional life.

How did your career progress after graduation?
During my final year, and for a short period after graduation, I was working part-time for Cisco Systems, Inc. It was a continuation of the work I had done with them during my year in industry at their headquarters in San Jose, California. At the end of that summer, I was accepted on to the Silicon Valley Internship Programme which brought me out to San Francisco in pursuit of my entrepreneurial aspirations. A year later, I am still at LoopUp, my host company for the year-long internship, working closely with a great team of product-focused individuals.

What are your future plans?
I intend on staying at LoopUp for the immediate future. I am also looking forward to pursuing a postgraduate degree, most likely here in California, hopefully at Stanford University. Looking further ahead, I plan on fulfilling my dream of starting my own company.

What advice would you give to someone thinking of coming to Kent?
I would say ‘Go for it!’ Once you get here, look around for opportunities and take advantage of them. You will have a great time, learn a myriad of skills and put yourself in a favourable position for the future.

EXCELLENT PROSPECTS
In the National Student Survey 2014, 100% of Kent’s Computer Science with a Year in Industry graduates were in work or further study six months after graduation.
CHOOSING YOUR PROGRAMME

All our degrees use Java and equip you with programming, modelling and design skills. A year in industry option is available with all the degrees offered by the School of Computing.

To make sure you choose the right degree, we give you the freedom to switch between closely related courses in the early stages of your studies. All the programmes listed in this brochure are based at the Canterbury campus. Computing, and Business Information Technology programmes are available at the Medway campus, please see our website for further details www.cs.kent.ac.uk

Computer Science: single honours

Our Computer Science degrees focus on the technical aspects of computing.

We offer Computer Science as a ‘general’ degree and as a ‘themed’ degree.

• With the general degree in Computer Science you take a broad range of compulsory modules in your first and second years and can select from a variety of options in your final year of study. If you want to keep your options open, then the general form of the degree is for you.

• The themed degree is based on the general degree but has a subject focus and this appears in the degree title. We offer three themed degrees:
  • Artificial Intelligence
  • Consultancy
  • Networks.

Themed degrees give you a choice of module options in the final year with the compulsory modules providing the focus of the subject. Having a themed degree on your CV identifies you as having greater knowledge in a particular area, and this may give you an advantage when you look for work after graduation. If you have a special interest that you would like to pursue, then a themed degree is for you.

Computer Science

This general degree covers the compulsory subjects of program design and implementation using Java, and software engineering, as well as offering a broad range of computer science topics including operating systems, computer architectures, computer security, concurrent programming, theory, databases and the web.

Computer Science (Artificial Intelligence)

This degree covers the compulsory elements of Computer Science as well as a broad range of Artificial Intelligence (AI) techniques, including neural networks and evolutionary algorithms, which draw on philosophy and psychology.

Computer Science (Consultancy)

This degree covers the compulsory elements of Computer Science and offers practical consultancy work as a student consultant in Kent IT Consultancy (KITC). Registration on this programme does not guarantee a place as a consultant in the KITC (see p19). If you are not selected for the KITC your degree title will be Computer Science.

Computer Science (Networks)

This degree covers the compulsory elements of Computer Science and looks at computer systems, communication, security and cryptography.

Computing: joint honours

Computing joint honours degrees are shared with another subject. The computing element of the degree focuses on the practical uses of computers rather than on the technical aspects. Central to the computing element are programming and information systems.

DID YOU KNOW?

Kent was ranked 16th in the UK in The Guardian University Guide 2016.
You can also choose from a range of topics that focus on computer applications, including web publishing and electronic commerce.

Computing and Business Administration

Your time is divided between a business-oriented, practical approach to computing and the study of Business Administration. For more details, see Kent’s leaflet on Business Administration at www.kent.ac.uk/courses/pdfs/business-admin.pdf

Other Computing degrees

Computing joint honours with 'and' in the title means your time is divided equally between computing and your joint subject. Joint honours options include the following:

Computing and...

- Business Administration
- Business Administration with a Year in Industry
- French
- German
- Hispanic Studies
- History
- Italian
- Philosophy

Other degree subjects

If you are planning to take your degree in another subject but would like to have computing as part of your studies, choose a degree 'with Computing' – the current option is Computing with Economics. A quarter of your time will be spent studying computing. See p27 for details.

International students

If you are applying from outside the UK without the necessary English language qualifications, you may be able to take the Kent International Foundation Programme (IFP). Passing the Kent IFP at the standard required by the academic school administering your main degree programme guarantees you entry on to the first year of the degree programmes listed here. For more details, see www.kent.ac.uk/ifp

“Kent has quite a reputation for the strength of its School of Computing, which was enough reason to place it on my shortlist. After visiting for an Open Day and seeing the facilities and atmosphere around the place, I was convinced: Kent was the right university for me.”

Simon Todd
BSc (Hons) Computer Science
STUDYING AT
STAGE 1

Your first year of study is Stage 1. At this level, you learn how to program in an object-oriented language; no previous programming experience is required.

Each stage comprises eight modules, four in each teaching term. Each module has two lectures and one to two hours of classes, making 14 formal contact hours per week and eight hours of 'homework club' drop-in sessions each term.

The marks from Stage 1 do not go towards your final degree grade, but you must pass to continue to Stage 2. If you choose to do the year in industry, your marks from Stage 1 will be used by employers to assess your suitability for a placement.

For joint honours programmes, including Computing and Business Administration, half your modules are taken in Computing; the others in your joint subject. Typical Stage 1 modules are listed below.

Please note, this list of modules is not fixed as new modules are always in development and choices are updated yearly. Please see our website – www.cs.kent.ac.uk – for the most up-to-date information.

Modules for Computer Science degrees
• Computer Systems
• Databases and the Web
• Foundations of Computing 1
• Foundations of Computing 2
• Introduction to Object-Oriented Programming
• Further Object-Oriented Programming
• Human Computer Interaction
• People and Computing

Modules for Computing (joint honours) degrees
• Computer Systems
• Databases and the Web
• Introduction to Object-Oriented Programming
• Further Object-Oriented Programming
• Modules are also taken in your joint subject area

Computing and Business Administration
• Databases and the Web
• Financial Accounting, Reporting and Analysis
• Introduction to Object-Oriented Programming
• Further Object-Oriented Programming
• Introduction to Marketing
• Managers and Organisations
• People and Computing

Optional modules:
• Microeconomics for Business
• Global Business Environment
• Introduction to Business Modelling.

CONTINUED OVERLEAF
STUDYING AT STAGE 1 (CONT)

Modules: Stage 1

Foundations of Computing 1 and 2
The construction of computer programs often requires some understanding of mathematics – either directly (for example, in graphics programming) or indirectly (for example, to prove the correctness of programs). These two modules teach the mathematical foundations of computer science, using examples that relate directly to the field of computing.

Human Computer Interaction
The design of interfaces of computing devices has always been important, but often sadly neglected, leading to systems that are annoying, hard to use and error prone. The advent of more diverse devices, such as phones and other touch devices, embedded systems and various gadgets has made this topic even more relevant. Modern devices have shown that interface design can make a huge difference in user satisfaction, usability, economic success and fun of using a given system. In this module, you discuss details of designing and testing interfaces – you will never look at the world around you in the same way again.

Introduction to Object-Oriented Programming
Programs are the fundamental building blocks of computing systems. This module introduces the design and implementation of programs using Java, which is a programming language that describes systems as interrelated objects. It uses an objects-first approach to cover the principles of object-orientation, modelling, and testing, and gives you the practical skills you need to work across a range of modern computing environments.

Further Object-Oriented Programming
A continued look at the areas covered in Introduction to Object-Oriented Programming.

People and Computing
Professionalism in the computing industry is the focus of this module. It presents the formal legal constraints on IT (data protection) while giving you an appreciation of the broader history of the field – each student is required to present a poster on a person/topic from computing history. You also develop an appreciation for estimation (such as the broadband speed required to deliver HD-TV) and make a video on a topic in this area. Assessments include presenting a case study on an ethical aspect of computing practice.

Computer Systems
Computer systems are the fundamental components and behaviours (hardware and software) of a typical computer system. This module explores the fundamentals of how computer systems collaborate to manage resources and provide services. It also introduces you to computer architecture and operating systems, and looks at the important topic of communications.

Databases and the Web
The module introduces a range of tools and techniques for creating both static and dynamic web pages. It covers creating static content using HTML5, controlling the appearance of pages using CSS and the use of JavaScript to improve interactivity. You are introduced to databases and SQL as a means of storing and manipulating dynamic content, and the use of PHP to integrate static and dynamic content.
Finally, you apply your model building, problem solving and numerical skills to solve everyday business problems.

**Introduction to Marketing**

This module demonstrates the importance of marketing in competitive and dynamic environments. The centrality of the consumer provides the focus for the module, with the needs of the firm shown in balance with consumers’ needs and wants. Key topics include: the marketing concept; the marketing environment; market segmentation and targeting; brand development and management; management of the marketing mix; new product development; and an overview of internationalisation.

**Managers and Organisations**

This module introduces you to the key concepts and theories of organisational behaviour and management. It integrates organisational theory with practical people-management issues. You also explore how the management of people and organisations are shaped by an increasingly complex and dynamic business environment, and the implications for managerial action.

**Microeconomics for Business**

You are introduced to economics and its role in analysing business decisions, strategic behaviour and issues. The module covers business organisations, supply and demand, operation of markets, business in a market environment and alternative theories of the firm.
STUDYING AT STAGE 2

Your second year of study is known as Stage 2. Subjects covered here often build on Stage 1 modules and cover topics at a deeper level.

Most Stage 2 modules are assessed by coursework and end-of-year examination. Marks from Stage 2 count towards your degree result.

If you are taking a joint honours programme, half of your modules are taken in computing; the others in your joint subject.

A list of typical Stage 2 modules follows. Please note this list of modules is not fixed as new modules are always in development and choices are updated yearly. Please see our website – www.cs.kent.ac.uk – for the most up-to-date information.

Compulsory modules
Each degree has specific modules that students on that programme take. These are as follows:

**Computer Science**
- Algorithms, Correctness and Efficiency
- Database Systems
- Functional and Concurrent Programming
- Operating Systems and Architecture
- Software Engineering
- Theory of Computing
- Web Development

**Computer Science (Consultancy)**
- Algorithms, Correctness and Efficiency
- Database Systems
- Introduction to Marketing
- Operating Systems and Architecture
- Software Engineering
- Theory of Computing
- Web Development

**Computer Science (Networks)**
- Algorithms, Correctness and Efficiency
- Database Systems
- Functional and Concurrent Programming
- Operating Systems and Architecture
- Software Engineering
- Theory of Computing
- Web Development

**Computing and Business Administration**
- Accounting for Management Control and Decision Making
- Computer Systems
- Database Systems
- Managing Human Resources in Contemporary Organisations
- Digital Marketing Strategy
- Software Engineering
- Strategy Analysis and Tools
Other Computing joint honours degrees
The compulsory module is:
• Software Engineering

Optional modules:
• Algorithms, Correctness and Efficiency
• Database Systems
• Introduction to Intelligent Systems
• Operating Systems and Architecture
• Web Development

You also take required modules in your other subject area.

Modules taught by the School of Computing

Algorithms, Correctness and Efficiency
This module builds on the Stage 1 programming modules and gives you the ability to design and use linked data structures, analyse the efficiency of algorithms, gain an understanding of known algorithms and a basic understanding of how to reason about programs by logical means.

Computer Systems
See p14 for details.

Database Systems
You look at the design, implementation and use of database systems. Topics include: database management systems architecture; data modelling and database design.

Functional and Concurrent Programming
This introduces you to fundamental concepts of functional and concurrent programming, using the Erlang language as a vehicle to put these concepts into practice. The first part of the module covers basic ideas in functional programming. The module also covers more advanced topics and consideration is given to the relevance and applicability of functional and concurrent programming for use in real applications.

Introduction to Intelligent Systems
You look at the motivation for designing intelligent machines, as well as the philosophical issues. Topics include number methods for knowledge representation and machine learning. You look at biologically-inspired algorithms, swarm-based methods and artificial immune systems.

Operating Systems and Architecture
The principles of computer operating systems and the architectures for which they are designed are covered in this module. You discover how these systems can affect layered software systems and look at the hardware implications of high-level programming language support.

Software Engineering
This module runs from the autumn term, when theoretical aspects of software engineering are introduced, into the spring term when you use your knowledge to work on a group-based software engineering project. This is a prerequisite to work in the Kent IT Consultancy (see p19).
STUDYING AT STAGE 2 (CONT)

Theory of Computing
You look at theoretical computing, building on the logic covered in Foundations of Computing modules at Stage 1. The topics covered include logic, finite automata and regular expressions, grammars and context-free languages, computability and decidability.

Web Development
This builds on the Stage 1 Databases and the Web module. The module includes Ajax, JavaScript and PHP, web services and web applications, web servers, payment systems, analytics and traffic analysis. By the end of the module, you should be able to create a web application.

Modules taught by Kent Business School

Accounting for Management Control and Decision Making
This module introduces you to the role of the accountant in the management information system as well as to accounting techniques and methods, which play a role in the organisational decision-making process and control of the business.

Digital Marketing Strategy
Integrating theory and practice, you use real market data to lead decisions in marketing strategy. You are expected to be able to identify markets where continuous innovation is possible with the introduction of products that have distinctive consumer benefits.

Managing Human Resources in Contemporary Organisations
You are introduced to the key concepts of managing people, including an examination of organisational, human resource management and industrial relations theory. This is achieved through relating relevant theory to practical people and organisational management issues.

Strategy, Analysis and Tools
You learn how to identify strategic issues and develop appropriate options to address them. You gain an appreciation of the complexity of employing strategy in the decision-making process. This also enhances your ability to read business articles from a strategic perspective and to present strategic arguments in a structured manner.
KENT IT CONSULTANCY (KITC)

All our degree programmes give you the opportunity to gain work experience as a student consultant with our Kent IT Consultancy (KITC), usually at Stage 3.

What is KITC?
KITC provides a project-based consultancy service to small businesses in Kent. Current students provide the consultancy work under the guidance of dedicated professional IT staff employed by the University.

Student consultants gain academic credit for the work they do, which counts towards their degree. In its first five years, more than 50 of our undergraduates have worked in the KITC as student consultants and over 30 consultancy projects have been successfully completed.

How can KITC help me?
Working for KITC can significantly improve your employment prospects. It gives you real work experience, which is invaluable to future employers. Also, when applying for jobs, it gives you the edge over other graduates who have not had this opportunity.

You can try out different aspects of IT consultancy work while still a student and find out what you like to do best, helping you to plan your career.

How do I become a student consultant in KITC?
You do not need any previous experience as a consultant but you do need to have successfully completed the relevant stages of a Computer Science-based degree or a Computing joint honours degree. You also need to demonstrate a keen interest in IT and have an aptitude for consultancy work. There are limited places available in KITC and you are required to go through an application process including an interview to compete for a role in KITC.

As a student consultant, you work at the University and take the consultancy modules as part of your degree. It is different from the year in industry, where you spend an additional year away from the University on placement.

What help is provided?
KITC is directed by a team of professional consultants with a detailed knowledge of the consultancy business. They help and support you through all stages of the process, supporting your relationship with the customer, the consultancy work that you do, and providing coaching and mentoring to help your career development and planning.

You are also assigned an academic supervisor to help with the academic aspects of the KITC experience.
YEAR IN INDUSTRY

Over 100 Kent computing students choose to do a Year in Industry, between Stages 2 and 3.

Career and study benefits
Employers are very keen to employ graduates who already have work experience. The year in industry can greatly enhance your job prospects by providing you with real commercial experience. It also allows you to evaluate a career path, and gain knowledge of the working environment. If your placement is a success, you may even be offered a job with the same employer after graduation.

The practical experience also improves your skills in many areas. This means it will be useful during your final year of study, helping you to gain a better degree.

Finding a placement
Our students have been on placements with leading companies in the UK, such as BT, Lilly, IBM, Intel, Microsoft, Morgan Stanley, Red Bull Racing and Sky. Some of our students go overseas to our placement partners in the USA and Hong Kong. There are frequent visits to the University by companies who present placement opportunities and interview candidates.

“I spent my placement year in Hong Kong working for HSBC. I really enjoyed my time there. I was part of a development and support team, and it was awesome to be able to use my knowledge to solve real-life-problems. I worked with teams in Hong Kong, China and France.”

Alex Alferovs
BSc (Hons) Computer Science with a Year in Industry

The School has a Placement Office, with a team dedicated to helping you to secure the right placement. They also give advice on placements that are likely to enhance your career prospects, help you to write a winning CV and hone your interview skills; they maintain close contact with you during your year away to give you support during your placement.

Salary and benefits
Students usually work for an entire calendar year. Salary and holiday entitlements vary according to the employer you work for. Many students find that they earn enough to be able to save some of their income, and this helps them in their final year of study.

Assessment
Students have to pass Stage 2 to be able to go on a Year in Industry. Please see the School of Computing website for further details.

Your placement is assessed and it contributes 10% to your overall degree mark.
STUDYING AT STAGE 3

Stage 3 is the final year of study and you are able to choose from a wide range of optional modules, allowing you to specialise in an area of your choosing.

Everyone takes a project module on a topic of their choice. This may be a group project, an individual research project or an IT consultancy project.

Most Stage 3 modules are assessed by a combination of coursework and end-of-year examination. The project is assessed by your individual contribution to the final project, the final report, an oral presentation and a viva examination. Your project counts for 25% of the year’s marks. Marks from Stage 3 count towards your degree result.

A list of typical Stage 3 modules in each programme is as follows. Please note: this list of modules is not fixed as new modules are always in development and choices are updated yearly. Please see our website – www.cs.kent.ac.uk – for the most up-to-date information.

**Modules for all degrees**
- Group Project or Research Project

**Compulsory modules**
- Computing and Business Administration
  - Service Management

**Optional modules**
All programmes include optional computing modules. Other options depend upon your degree.

Optional modules currently include, but are not limited to:
- Cognitive Neural Networks
- Computational Creativity
- Computer Graphics and Animation
- Computer Networks and Communications
- Computer Security and Cryptography
- Computing in the Classroom
- Computing Law and Professional Responsibility
- Corporate and Business Strategy
- Data Mining and Knowledge Discovery
- Internet of Things
- Introduction to Intelligent Systems
- IT Consultancy Practice – 2
- Natural Computation
- New Enterprise Start-up
- Strategic HR Management
- Philosophy of Cognitive Science and Artificial Intelligence
- Programming Language
- Service Management.

Further options in business or philosophy are available for students following a themed degree in these areas.

CONTINUED OVERLEAF
STUDYING AT STAGE 3 (CONT)

Modules taught by the School of Computing
Group or Research Project
You apply the skills acquired in other modules to complete a project. This gives you the chance to explore an area of interest and produce a large piece of work. Prospective employers often ask about projects in interviews and this module helps you to develop professional work practices.

Cognitive Neural Networks
You learn about neural networks, the mathematical equations that they are based on and look at some examples of computation applied to neurobiology and cognitive psychology. This knowledge is put into practice by building neural networks using state-of-the-art simulation technology and using them in the solution of problems.

Computational Creativity
In this module, you gain an overview and understanding of key practical, theoretical and philosophical research and issues around computational creativity (computer programs that can be creative, e.g. with music, art, language, science or design). You compare human and computer creativity and also get practical experience in writing and evaluating creative software.

Computer Graphics and Animation
This module examines the concepts of computer graphics and animation. You become familiar with technologies, techniques and algorithms for the acquisition, generation, manipulation, presentation, storage and communication of various kinds of graphical data. You then apply this through the development of computer graphics software.

Computer Networks and Communications
This module starts with current computer network and communication technologies. You learn how the hardware and software components are organised and how they actually work (as opposed to how they are used, which is covered in an earlier module). Key topics are then chosen to reveal the nature of state-of-the-art technology and issues that have yet to be solved.

Computer Security and Cryptography
Here you learn about techniques including computer operating systems, distributed applications (such as e-commerce) and embedded systems (from smart cards and pay-TV to large industrial plant and telecommunication systems).

Computing in the Classroom
This module runs under the Student Ambassador Scheme. You promote computing in a local school, where you begin by observing the class teacher, and progress to small group/whole class teaching. You devise and run a special computing project with the pupils.
Computing Law and Professional Responsibility
This module examines professional issues within organisations and includes topics on data privacy legislation, criminal law relating to networked computer use, and intellectual property rights, including copyright, patent and contract law. Specific topics change from year to year, as both computer law and professional responsibilities continue to evolve.

Data Mining and Knowledge Discovery
What are the strengths and weaknesses of various data mining and knowledge discovery techniques? How do you choose the most appropriate for any particular task? This module gives you the chance to use a state-of-the-art data-mining tool. You evaluate the quality of the discovered knowledge and can extend data mining concepts and principles to text and web mining.

Internet of Things
You study the use of internet technologies to access and interact with objects in the physical world. As well as theoretical topics, the practical component of the module consists of building the hardware and software for a sensor network and a system to visualise data from that network.

Introduction to Intelligent Systems
Please see module description on p17.

IT Consultancy Practice
Students taking this module undertake one or (typically) more assignments for the Kent IT Consultancy (KITC). Each assignment will be one of three types: work on one of KITC’s contracts with an external client (to the extent that client-funded work allows, every student will be given at least one assignment of this type); a contribution to the infrastructure of KITC itself; formulating a costed proposal for the future development of KITC. In suitable cases, and to the extent that numbers allow, you may also be asked to undertake supervisory or mentoring duties. Training will be provided.

Natural Computation
You examine developments in biological-inspired computation and other areas such as quantum computing. There is also a practical element to the module; you gain knowledge of a widely-used computing paradigm – genetic algorithms (GA). Topics covered include evolutionary computation, swarm intelligence and artificial immune systems.

Programming Language Implementation
You study the techniques for interpreting and compiling programming languages, implementing them in a typed functional programming language. The module outlines a whole compiler from source to machine code, focusing in depth on key algorithms and techniques. You gain the knowledge to understand and modify a simple, but complete, example compiler.
STUDYING AT STAGE 3 (CONT)

**Modules taught by the School of Engineering and Digital Arts**

**Embedded Computer Systems**
This module examines the control and organisational centre of an electronic or mechanical system, and looks at issues related to time critical systems. It also provides exposure to practical embedded systems design through substantial practical work.

**Image Analysis and Applications**
You are introduced to techniques and applications for automated intelligent processing. The display, manipulation and efficient communication of images are key elements in the design and utilisation of many contemporary applications in digital media. You learn the basic techniques required for image processing and automated image analysis, including the use of so-called neural network processors in relation to problems of image recognition. It includes an introduction to the emerging field of biometrics (the automatic identification of individuals).

**Modules taught by Kent Business School**

**Corporate and Business Strategy**
This module extends your knowledge and understanding of strategic management and strategic issues. It introduces a range of contemporary issues associated with the formulation and implementation of corporate and business strategies. The module uses a project in which you identify and suggest possible strategic solutions to a strategic issue in a real organisation to develop your ability to link theory and practice in real-life situations.

**New Enterprise Start-up**
This module examines the characteristics required of a business to succeed and the reasons for business failure, risks and uncertainties, skills requirements for business ownership and sources of advice and support for businesses. It looks at the new business planning process, developing and evaluating the business idea and producing a business plan for potential lenders and investors. It covers the financial aspects, market research and planning, quality standards, legal issues, staff and physical resources, and the overall planning and implementation of the business plan.

**Strategic Human Resources Management**
This module introduces you to the strategic management of people, linking the management of human resources to the achievement of the strategic aims of the organisation. This is achieved through relating relevant theory applied to practical people and organisational management issues.

**Module taught by the School of European Culture and Languages**

**Philosophy of Cognitive Science and Artificial Intelligence**
The cognitive sciences are united in their attempt to discover the nature of cognition: what is it to be intelligent, to have the capacity for rational thought, to have the ability to form concepts? An underlying assumption of classical approaches to the cognitive sciences is the idea that intelligent creatures have ‘mental representations’ and that they manipulate these representations by rule-governed processes. This is challenged by non-classical approaches. In the module, you consider the vexed question of whether machines process representations and whether they can be construed as intelligent.

---

**DID YOU KNOW?**
In the National Student Survey 2014, Kent gained the 3rd highest score in the UK for overall student satisfaction.
VISIT THE UNIVERSITY

Come along for an Open Day or an Applicant Day and see what it is like to be a student at Kent.

Open Days
Kent runs Open Days during the summer and autumn. These provide an excellent opportunity for you to discover what it is like to live and study at the University. You can meet academic staff and current students, find out about our courses and attend subject displays, workshops and informal lectures. We also offer tours around the campus to view our sports facilities, the library, and University accommodation. For further information and details of how to book your place, see www.kent.ac.uk/opendays

Applicant Days
If you apply to study at Kent and we invite you to attend an interview, you will be sent an invitation to one of our Applicant Days. You can book to attend through your online Kent Applicant Portal. The Applicant Day includes presentations in your subject area, guided tours of the campus, including University accommodation, and the opportunity to speak with both academic staff and with current students about your chosen subject. For further information, see www.kent.ac.uk/visit

Informal visits
You are also welcome to make an informal visit to our campuses at any time. The University runs tours of the Canterbury and Medway campuses throughout the year for anyone who is unable to attend an Open Day or Applicant Day. It may also be possible to arrange meetings with academic staff, although we cannot guarantee this. For more details and to book your place, see www.kent.ac.uk/informal

Alternatively, we can provide you with a self-guided tour leaflet, which includes the main points of interest. For more details and to download a self-guided tour, go to www.kent.ac.uk/informal

Scholarships and bursaries
For details of scholarships and bursaries at Kent, see www.kent.ac.uk/ugfunding
More information

If you have any further queries on how to choose your degree, our admissions procedures, how to prepare for your studies or would like information about the University of Kent’s facilities and services, please contact us.

T: +44 (0)1227 827272
Freephone (UK only): 0800 975 3777
www.kent.ac.uk

For the latest departmental information, please see
www.cs.kent.ac.uk

Location
Canterbury

Award
BA (Hons), BSc (Hons)

Degree programme

Single honours
• Computer Science (G400)
• Computer Science with a Year in Industry (G404)
• Computer Science (Artificial Intelligence) (G4G7)
• Computer Science (Artificial Intelligence) with a Year in Industry (G4GR)
• Computer Science (Consultancy) (G403)
• Computer Science (Consultancy) with a Year in Industry (G406)
• Computer Science (Networks) (G421)
• Computer Science (Networks) with a Year in Industry (G420)

Joint honours
Computing and...
• Business Administration (GNL2)
• Business Administration with a Year in Industry (GNK2)
• French (RG14)
• German (RG24)
• Hispanic Studies (GR44)
• History (VG14)
• Italian (RG34)
• Philosophy (VG54)

Degress ‘with’ Computing
You spend less than half of your time studying Computing.
• Economics (L1G4)

Typical offer levels
Computer Science and Computing degrees
ABB, plus GCSE Mathematics grade C. IB 34 points overall or 16 at Higher, Mathematics 5 at HL or SL, or Mathematics Studies 6 at SL.
BTEC Extended Diploma: Distinction, Distinction, Merit overall

Direct entry to Stage 2: please contact the Admissions Officer
cs-admissions@kent.ac.uk

Required subjects
GCSE Mathematics grade C

Year abroad
If you are studying a modern language, you will spend a year abroad as part of your course.

Year in Industry
Available on all programmes.

Professional recognition
G400, G403, G404, G406, G420, G421, G4G7, G4GR: These have full Chartered IT Professional (CITP) accreditation from the British Computer Society (BCS).
GNL2, GNK2: These have partial BCS CITP accreditation.

Foundation programme
International students can take a foundation programme to gain the necessary entry requirements. See www.kent.ac.uk/courses/foundation

Offer levels and entry requirements are subject to change. For the latest information, see: www.kent.ac.uk/ug
COME AND VISIT US

To find out more about visiting the University, see our website:
www.kent.ac.uk/visit