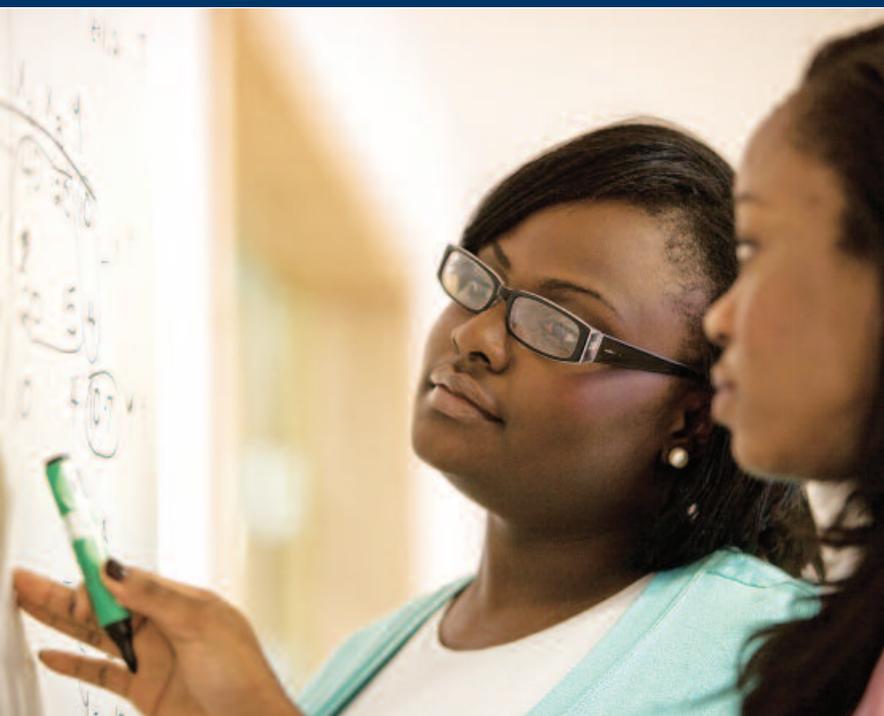


The UK's European university

University of
Kent



ACTUARIAL SCIENCE

Canterbury

/ Undergraduate
study

ACADEMIC EXCELLENCE AND INSPIRATIONAL TEACHING

Kent is one of the UK's leading universities with all of our academic schools producing world-class research. Kent's School of Mathematics, Statistics & Actuarial Science has an excellent reputation and our courses were ranked 9th in the UK in the 2010 National Student Survey.

World-leading research

Research at Kent is rated as internationally excellent and academics within our School are at the forefront of their fields. In the most recent assessment of research quality across UK universities, 65% of our statistics and operational research and 45% of our applied mathematics research were rated 'world-leading' or 'internationally excellent'.

As a student, you will become a member of an academic community that welcomes and encourages original ideas and independent thinking. The School hosts regular research events including conferences, seminars and lectures, which you are invited to attend and take part in.

Teaching excellence

The University of Kent is one of a very limited number of universities in the UK to teach actuarial science. Actuaries evaluate and manage financial risks, particularly in the financial services industry. They

form a small, yet well respected, influential and relatively well-paid profession. If you are good at mathematics and are curious about financial matters, you should enjoy studying actuarial science.

Our actuarial staff are involved in examining and tutoring for the actuarial profession and are in frequent contact with actuaries working in insurance companies and consultancy firms.

All of the core actuarial science modules on our degree are taught by qualified actuaries who are Fellows of the Institute or Faculty of Actuaries with many years' practical experience in consultancy or the insurance industry. Our department is friendly and we make a point of getting to know our students on a one-to-one basis.

A global outlook

Kent is known as the UK's European university because of its strong links with top-ranking continental European institutions, our UK locations close to the European mainland and our postgraduate centres in Paris and Brussels. We have students from some 30 European countries, about 11% of the student population, on campus and a high proportion of our teaching staff are from the European mainland.

The international environment of the School of Mathematics, Statistics & Actuarial Science gives you the chance to look at the subject from a wide range of perspectives. Many

of our staff speak a second language or undertake fieldwork abroad, and you will be studying in a friendly and cosmopolitan environment.

Professional exemption

For students who wish to qualify as actuaries, recognition of our degree by the Actuarial Profession is very important. Our actuarial science programmes are fully accredited by the UK Actuarial Profession. Our BSc in Actuarial Science gives you the chance to gain exemptions from eight of the Core Technical subjects (CT1 to CT8) of the professional examinations set by the UK Actuarial Profession, and provides you with a firm foundation for the later subjects. If you do well enough in your degree to obtain the full set of exemptions available, you could reduce your time qualifying as an actuary by three years or more.

International recognition

The British actuarial qualifications – Fellowship of the Institute of Actuaries (FIA) or Fellowship of the Faculty of Actuaries (FFA) – are highly valued throughout the world and so are ideal if you are an international student or someone who wants to work in another country. Nearly 2,000 actuaries with British qualifications work abroad.

Industry experience

We are able to offer you the chance to gain work experience with insurance companies either during the summer vacation or by taking a year in industry at the end of your



second year. At Kent, you also get practical experience of working with PROPHEX, the market leading actuarial software package, which is used by commercial companies worldwide for profit testing, valuation and model office work. This software package is provided by SunGard, a global leader in providing software solutions for financial services.

Invicta Actuarial Society

The Invicta Actuarial Society is a regional actuarial society organised by Kent students and academic staff. Meetings on campus are attended by practising actuaries and other visiting actuaries who present current research and business problems and provide valuable contact between students and employers.

Flexible entry

If your grades are not high enough to qualify for direct entry on to our honours degree, you may be able to take a four-year Foundation Degree Programme (with an initial year of mathematics). If you successfully complete the foundation year, you can take the first-year (Stage 1) modules. Satisfactory completion of these modules allows you to transfer to the Actuarial Science degree at Stage 2.

If you are an overseas applicant who wants to take a foundation course including English language, you should apply directly to the University and not through UCAS. We normally require a minimum score of 5.5 on the British Council IELTS or equivalent.

A successful future

As well as providing a first-rate academic experience, we want you to be in a good position to face the demands of a tough economic environment. During your study, 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 see our Employability webpage at www.kent.ac.uk/employability

DID YOU KNOW?

Kent was ranked 13th in the UK for Mathematics in *The Complete University Guide 2012*.



DID YOU KNOW?

Kent has a cosmopolitan community with students from around 125 different countries.

SUPERB STUDENT EXPERIENCE

Our campus at Canterbury provides a stunning location for your studies and offers first-class academic and leisure facilities. The campus benefits from a multicultural learning environment and is within easy reach of both London and mainland Europe.

Excellent resources

The School of Mathematics, Statistics and Actuarial Science has excellent teaching resources, with first-rate equipment and an integrated audio-visual system in our classrooms to help provide stimulating lectures. We have dedicated computing facilities within the School, in addition to the general University IT provision.

Diverse environment

Our students come from a variety of backgrounds. There is always a number of mature students with work experience, as well as an increasing number of students from overseas. This mix means you not only learn from your lecturers, but also from the experiences of your peers.

Beautiful green campus

Our campus has plenty of green and tranquil spaces, both lawns and wooded areas, and is set on a hill with a view of the city and Canterbury Cathedral.

For entertainment, you're spoilt for choice. The campus has its own cinema, theatre, and even a student nightclub. It has a reputation for being a very friendly university

with a cosmopolitan environment. There are many restaurants, cafés and bars on campus, as well as a sports centre and gym.

Everything you need on campus is within walking distance, including a general store, an off-licence, a bookshop, banks, a medical centre and a pharmacy. From campus, it's a 20-minute walk or a short bus-ride into town.

Attractive location

Canterbury is a lovely city with medieval buildings, lively bars and atmospheric pubs, as well as a wide range of shops. The attractive coastal town of Whitstable is close by and there are sandy beaches further down the coast. London is under an hour away by high-speed train.





STUDENT PROFILE

Jacob Sapwell has just finished his Actuarial Science degree.

What attracted you to studying at Kent?

I was offered a place by two universities and chose Kent for two main reasons – firstly, staff at the Open Day seemed much more friendly and to take more of an interest in prospective students. Secondly, the campus looked like a really nice place to learn.

How is your course going?

I have just finished my degree and, for me, it went extremely well. The degree was a really good fit for my skills and I coped with it well. I will be graduating with a First.

How would you describe your lecturers?

I think there is a good mix of lecturers at the University. Doing Actuarial Science meant I got taught by several Mathematics lecturers and several former actuaries. Both sets of lecturers were experts in their fields. I felt that the overall quality of lecturing was very good. Having set office hours meant that the lecturers were easily available for consultations. I rarely used additional resources as I felt the lectures given were often sufficient.

What do you think about the level of support in your studies?

I think one of the strongest features of Kent as a university is the careers advice it offers. With regard to Actuarial Science, Mark Heller

in particular offered lots of good careers-based services. I thought the seminars and CV/interview tips he provided were very valuable in helping me secure a job.

Which modules have you enjoyed the most, and why?

I found most of the modules very interesting. I think my favourite modules were Contingencies I and II, simply because the nature of the calculations and the memorising of the links between lots of equations played to my strengths. I also got great enjoyment from managing to overcome topics which I initially thought looked impossible. It was really satisfying to get my head round them by the end of the year. (Time Series Modelling and Simulation and Mathematics of Financial Derivatives are examples of this).

Did you spend a year in industry?

No, but I did a summer internship between my second and third years. I found the experience very useful and enjoyable. It gave me an insight into how the knowledge we gain on the course is applied in the workplace. It also made some of my third-year studies easier, as I was taught some of the things we went on to cover, while at work.

What are the facilities like on campus?

The facilities are very good. Lecture theatres are relatively comfortable and the screens are clearly visible in almost all of the rooms. There are a lot of quiet study spaces and

computer rooms. There are several nice bars and restaurants on campus and the sport facilities are good.

What sort of things do you do in your spare time?

I played on the Ultimate Frisbee team at the University. For me, this was a great way to spend my time when I was not studying. It was good socially and a great way to keep fit. I also like playing fantasy sports online (fantasy Premiership, fantasy American football etc). I actually find that these activities use a lot of the skills that you pick up as a statistics student (or maybe I just overthink the game!).

What kind of career do you hope to follow?

I have managed to secure a graduate job as a trainee pensions actuary working in London for Towers Watson. I enjoyed my internship with them, so I am hoping I will enjoy this job and will not need to change career for a long time.

Any advice to other students?

Firstly, you really should attend all of the lectures. On a mathematics course, the handouts often look impossible unless you are talked through them. Also, it is really important to have a go at every exercise sheet you are given. I found them a good way to measure how well I was keeping up with the course content. It is tempting to think “Yeah I know how to do that”, but unless you actually do it, you will have forgotten everything by the end of the term!

A SUCCESSFUL FUTURE

Kent equips you with essential skills to give you a competitive advantage when it comes to getting a job and the University is consistently in the top 20 for graduate starting salaries.

Good career prospects

According to recent employment statistics, Kent graduates are doing better than ever in the changeable job market. Six months after graduation in 2009, only 4.8% of the University's students were without a job or further study opportunity.

The UK actuarial profession is small, but influential and well rewarded. There are around 7,500 qualified actuaries currently in the UK, the majority of whom work in insurance companies and consultancy practices.

Our graduates have found work as trainee actuaries in financial management, insurance companies and consultancy practices, the Government Actuary's Department,



the stock exchange and other areas of financial management, or have gone on to further study.

Gain transferable skills

Our programme is fully accredited by the actuarial profession and gives you the opportunity to gain practical work experience within the industry. Through your study, you acquire communication skills, the ability to work in a team and independently, and learn how to present information clearly and concisely.

Careers advice

The Careers Advisory 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 graduate opportunities before and after you graduate.

Further information

For more information on the careers help we provide at Kent, see our Employability webpage at www.kent.ac.uk/employability

DID YOU KNOW?

Kent was ranked 1st in the UK for mathematics graduate employment prospects in *The Complete University Guide 2011* and *The Times Good University Guide 2011*.

GRADUATE PROFILE

Natanya Roelofse graduated in 2010 and now works as a trainee actuary.

Why did you choose Kent?

I knew that I wanted to become an actuary and I felt that Kent offered the right course, along with exemptions, to enable me to reach my goal the quickest. On coming to an Open Day, I was also impressed by the lovely University campus. As soon as I saw the surroundings and spoke to the students and lecturers, I knew that Kent was the place for me!

What attracted you to the course?

Most of the lecturers are qualified actuaries and have worked in the industry themselves. My course was very much based on getting me qualified as an actuary by providing exemptions from CT exams and also preparing me for the exams I would have to complete while working.

What was your degree course like? And what about the lecturers?

My degree was very much focused on preparing me for daily life as an actuary. Most of the lecturers are qualified actuaries and have worked in the industry themselves. This made my course very exciting and my classes were very much based on current issues affecting the actuarial industry as well as the basic knowledge I need to become an actuary.

How did your degree course lay the foundations for your chosen career?

My degree has enabled me to get exemptions from several of the Institute of Actuaries' exams, it has prepared me for the exams I still need to sit and it has given me enough knowledge to get a graduate position at one of the biggest life insurance companies in the UK.

What extra-curricular activities did you get involved with during your time at Kent?

I set up an on-the-go massage company on the ferries between Dover and Dunkerque which provided really useful work experience. I also joined the University hockey club and played for the ladies 1st team which was loads of fun!

Could you describe your career path since leaving Kent?

I have joined a large life insurance company as a trainee actuary. I have also had my first actuarial exam and am currently preparing for my second set of actuarial exams.

Could you describe a typical day in your current role?

I work in the capital and value reporting team. At the moment, my typical day is spent understanding risks that the company may face. This includes setting up different stress tests, liaising with other teams, analysing and interpreting results, and documentation of results. Once this is done and the various risks are understood, meetings are set up to explain this to my clients.

What are your future plans?

My goal is to qualify as an actuary as soon as possible while gaining more and more knowledge within the insurance industry.

Finally, what advice would you give to someone thinking of coming to Kent?

Enjoy student life, get involved in extra-curricular activities and attend your lectures – it really pays off!

STUDYING AT STAGE 1

Stage 1 represents the first year of your degree programme.

In the first year, and to a lesser extent in the second year, the course has some overlap with other mathematical degrees. This gives you the flexibility to transfer to certain other degrees at the end of your first year or, in some cases, at the end of your second year. In each year of study you take a total of 120 credits. Most modules are worth 15 credits.

In the first year, all students study the following modules:

- Business Economics
- Calculus and Modelling*
- Financial Mathematics*
- Matrices and Computing
- Probability and Statistics for Actuarial Science
- Proofs and Numbers.

*30-credit module

Modules: Stage 1 Business Economics

You are given an introduction to the essential principles and methods of economics with a focus on application in the business world, suitable for students who may not have studied economics before. We aim to give you enough knowledge to gain exemption from the actuarial profession's examination, while also giving a coherent coverage of the material suitable for students of other degree programmes where understanding economic concepts and principles is beneficial.

Calculus and Modelling

In the first part of the module, we take a calculus approach to mathematical analysis and provide rigorous proofs of various fundamental results in classical analysis. In the second part, the calculus techniques are used to solve differential and difference equations, and numerous applications are discussed.

Financial Mathematics

The idea of interest, which can be thought of as a price for the use of money, is fundamental to all long-term financial contracts. Interest is said to be compound if interest is payable on the interest previously earned. This module deals with accumulation of past payments and the discounting of future payments at fixed and varying rates of interest. It is fundamental to the financial aspects of Actuarial Science.

Matrices and Computing

Vectors and matrices play an important role in many branches of mathematics and in many of its applications. The first part of this module provides an introduction to these basic notions and their applications. The second part introduces you to powerful software tools used in modern mathematics.

Probability and Statistics for Actuarial Science

This module, together with the second year module Probability and Statistics for Actuarial Science 2, provides a grounding in the aspects of statistics and in particular statistical modelling that are of relevance to actuarial work. You are introduced to the basic concepts of statistics and elementary probability theory. The module lays the foundations for more advanced work in your second year.

Proofs and Numbers

Numbers and proofs are central notions in modern mathematics that have found applications in many other sciences and also in our everyday life. For instance, the security of our mobile phones relies on properties of integers. In this module, you are introduced to some of the fundamental results in number theory, and gain an appreciation of the concept of proof in mathematics.

"A great advantage of studying Actuarial Science at Kent is that a lot of the lecturers are qualified actuaries who have had experience of working in the areas they are talking about. This leads to a much better all-round knowledge, as well as good advice for when you leave university."

John Small
Actuarial Science

STUDYING AT STAGES 2 AND 3

Stages 2 and 3 represent the second and final years of your degree programme.

Most of the teaching is by lectures and examples classes. You can go to regular supervised classes where you can get help and advice on the way you approach problems. For further help, you can consult individual lecturers during their office hours. We also make full use of email. Modules which involve programming or working with computer software packages usually have practical sessions associated with them.

Each year, there are a number of special lectures by visiting actuaries from external organisations, to which all students are invited. These lectures help to bridge the gap between actuarial theory and its practical applications.

Most modules are assessed by a combination of end-of-year examinations and coursework. Both your second and final-year marks count towards your final degree result.

In the second year, all students take the following modules:

- Analysis
- Contingencies I
- Finance and Financial Reporting*
- Linear Algebra
- Probability and Statistics for Actuarial Science 2



- Statistics for Insurance
- Time Series Modelling and Simulation.

*30-credit module

In your final year, you take the following modules:

- Contingencies II
- Financial Modelling
- Life Assurance Practice
- Mathematics of Financial Derivatives
- Pension Funds
- Portfolio Theory and Asset Pricing Models
- Stochastic Processes
- Survival Models.

Modules: Stage 2 Analysis

Being able to handle a margin of error with confidence is the basis of all modern analysis. In this module, you look at convergence of sequences and series, and

continuity and differentiability of functions from this point of view. We also consider applications to fixed point problems and to calculating integrals.

Contingencies I

This module introduces the concept of survival models, which model future survival time as a random variable. This concept is combined with the financial mathematics learned in the first year, making it possible to analyse contracts which depend on survival time, such as life insurance and pensions.

Finance and Financial Reporting

This module is an introduction to the principles of corporate finance and financial reporting. You look at the concepts and elements of corporate finance, the role and nature of financial institutions operating in financial markets,

STUDYING AT STAGES 2 AND 3 (CONT)

the concepts and techniques of financial accounting. You also learn how to interpret critically the financial reports of companies and financial institutions, including financial statements used by pension funds and insurance companies. Finally, you examine the use of spreadsheets in financial analysis.

Linear Algebra

Systems of linear equations are used to model a wide range of phenomena and have numerous practical applications in economics, finance and engineering. Studying the structure of the solution sets for such systems leads to the abstract concepts of vector spaces and linear transformations. This module involves both an exploration of the theory of vector spaces and investigation of methods for solving systems of linear equations.

Probability and Statistics for Actuarial Science 2

This module develops the techniques introduced in the first-year module, Probability and Statistics for Actuarial Science. The probability component focuses on how to find probability distributions of functions of random variables. We also introduce you to the theory and practice of regression, and associated linear model techniques.

Statistics for Insurance

What is the probability of disaster? This module covers aspects of statistics which are particularly relevant to insurance. Some topics such as risk theory and credibility

theory have been developed specifically for actuarial use. Other areas, such as Bayesian Statistics, have been developed in other contexts but now find applications in actuarial fields. Stochastic processes of events such as accidents, together with the financial flow of their payouts, underpin much of the work you do in this module.

Time Series Modelling and Simulation

A time series is a collection of observations made sequentially in time. Examples occur in a variety of fields, ranging from economics to engineering, and methods of analysing time series constitute an important area of statistics. This module looks at various time series models, including some recent developments, and provides modern statistical tools for their analysis. We consider various practical examples to help you tackle the analysis of real data.

Modules: Stage 3 Contingencies II

This module develops the techniques introduced in the second-year Contingencies I module and applies actuarial techniques to a wide range of products. Expenses and profitability models used for pricing, reserving and assessing profitability are covered. This module also covers population/selection techniques.

Financial Modelling

You are introduced to financial models and shown how to analyse and summarise data, develop a model with an audit trail and develop the ability to apply the results. This module also gives students practical experience of working with the financial software, PROPHET, which is used by commercial companies worldwide for profit testing, valuation and model office work.





Life Assurance Practice

This module covers the structure and operation of life assurance companies. You study the following areas: the types of policies issued and their uses; asset shares for life assurance products; with profit surplus distribution; the effect of the general business environment on an insurer; sources of risk to a life insurance company.

Mathematics of Financial Derivatives

This module examines the mathematics of financial derivatives and of interest rate models. Topics covered include: Brownian motion, properties of option prices, valuation methods and hedging techniques (including the Black-Scholes derivative-pricing model), models of the term structure of interest rates and simple models for credit risk.

Pension Funds

In this module, you look at some of the most important aspects of pension funds from an actuarial perspective. The first part of the module explains the background of the legal and regulatory framework within which pension funds may be established in the UK. We then consider the main questions that arise in the actuarial management of such funds. For example, how should we monitor and control the accumulation of monies within the fund? What plan of contributions should we recommend to an employer who establishes such a fund?

Portfolio Theory and Asset Pricing Models

This module examines current theories of portfolio management and asset modeling. Topics covered include: utility theory, measures of investment risk, mean-variance portfolio theory, single and

multifactor models of asset returns, asset pricing models, the Efficient Markets Hypothesis, stochastic models of the behaviour of security prices and an introduction to Brownian motion.

Stochastic Processes

A stochastic process is a process developing in time according to probability rules; for example, models for reserves in insurance companies, queue formation, the behaviour of a population of bacteria, and the persistence of an unusual surname through successive generations. In this module, you look at a wide variety of stochastic processes and their applications: random walk, Markov chains, processes in continuous-time such as the Poisson process, the birth and death process and Brownian motion.

Survival Models

Calculations in life assurance, pensions and health insurance require reliable estimates of transition intensities/survival rates. This module shows you how to estimate these intensities. Topics include: the distribution and density functions of the random future lifetime, the survival function and the force of hazard.

SCHOLARSHIPS AND BURSARIES

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

VISIT THE UNIVERSITY

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

Open Days

Canterbury Open Days are held in the summer and autumn for potential students, and their families and friends, to have a look round the campus. The day includes a wide range of subject displays, informal lectures and seminars, and the chance to tour the campus with current students to view accommodation and facilities. You can also meet staff to discuss course options or admissions, disability and dyslexia support and study skills. For more information, see www.kent.ac.uk/opendays

UCAS Visit Days

UCAS Visit Days run between December and April each year. They include a tour of the campus, a general talk on the University and a talk from a departmental representative. You have the chance to meet academic staff in your chosen subject and to discuss any queries you may have. If you are invited for an interview, it will usually be held on one of our Visit Days. If we make you an offer without an interview, it usually includes an invitation to a Visit Day, but this might not be possible if you have applied late. For more information, see www.kent.ac.uk/visitdays

More information

If you have any queries, the Information and Guidance Unit offers a friendly service with advice on how to choose your degree, admissions procedures, how to prepare for your studies, and information about the University of Kent's facilities and services.

Information and Guidance Unit,
The Registry, University of Kent,
Canterbury, Kent CT2 7NZ
Tel: 01227 827272
Freephone (UK only):
0800 975 3777
Email: information@kent.ac.uk





How to apply

For admissions enquiries
Tel: 01227 827272
Email: recruitment@kent.ac.uk

For further information about the Actuarial Science degree programme, contact:
The Admissions Officer,
School of Mathematics, Statistics and Actuarial Science
University of Kent,
Canterbury, Kent, CT2 7NP
Tel: 01227 827181
Fax: 01227 827932
Email: imsadmin@kent.ac.uk
www.kent.ac.uk/smsas

Terms and conditions: the University reserves the right to make variations to the content and delivery of courses and other services, or to discontinue courses and other services, if such action is reasonably considered to be necessary. If the University discontinues any course, it will endeavour to provide a suitable alternative. To register for a programme of study, all students must agree to abide by the University Regulations (available online at: www.kent.ac.uk/regulations).

Data protection: for administrative, academic and health and safety reasons, the University needs to process information about its students. Full registration as a student of the University is subject to your consent to process such information.

Location

Canterbury.

Award

BSc (Hons).

Programme type

Full-time.

UCAS code

Actuarial Science (N323)
Actuarial Science with a Year in Industry (N324)

Offer levels

A/AS level 360 points (3 A level equivalents) inc AA at A level (or 340 points, AB if Further Maths A level is taken), IB Diploma 33 points inc 6 in HL Maths or IB Diploma with 17 points at Higher inc 6 in Maths.

Required subjects

A level Maths grade A inc the core syllabus of Pure Maths or B in Further Maths. (Use of Maths is not accepted.)

Professional recognition

This degree has been fully accredited by the UK Actuarial Profession. It can give exemption from eight of the Core Technical subjects (CT1 to CT8) of the professional examinations set by the UK Actuarial Profession, and gives a firm foundation for the later subjects. Graduates may also get exemption from some of the examinations set by The Chartered Insurance Institute.

For latest course information, including entry requirements, see: www.kent.ac.uk/ug

COME AND VISIT US

We hold Open Days at our Canterbury
and Medway campuses.

For more information, see:
www.kent.ac.uk/opendays