



University of
Leicester

Department of Mathematics

POSTGRADUATE DIPLOMA/MSC DISTANCE LEARNING COURSE IN

Actuarial Science



THE Awards Winner
2007, 2008, 2009, 2010, 2011

www.le.ac.uk/math

Welcome to Leicester

We believe that our world changing research produces high-quality teaching – and will inspire you to go further.

At Leicester we're all about pushing the boundaries – from our revolutionary discoveries in DNA fingerprinting, to unearthing ancient civilisations in Libya – we consider education and knowledge to be a power for good.

But this is also about you. We know our work is better in a shared academic community that includes you. Where you're coming from and your journey up to this point will have given you your own personal perspectives and ideas. Your experience, energy and willingness to ask the difficult questions benefits you and us.

We believe that our teaching is inspirational when delivered by passionate scholars engaged in pioneering research. At Leicester you'll be working with our leading academics who are at the cutting edge of their disciplines. By sharing their enthusiasm you'll be immersed into a stimulating and innovative learning environment, which will enable you to realise your potential and to compete alongside the very best.

Over half of our students are studying at postgraduate level so we understand your needs and concerns whatever your subject or mode of study.

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Leicester Credentials

- We are consistently ranked in the top 20 of all UK national league tables.
- We are also ranked in the top 2% of universities in the world by the QS World University Rankings 2011, Taiwan World University Rankings and THE World University Rankings.
- The University has won Times Higher Awards in 2007, 2008, 2009, 2010 and most recently in 2011 for its work in innovation and technology. It is the only university to win five consecutive awards.
- We are ranked top after Oxbridge in the 2011 National Student Survey amongst 120 mainstream public universities in the UK. Our levels of student satisfaction have been consistently in the top-10 since the annual survey commenced in 2005.
- The research conducted by the University has the strongest impact of any Midlands university measured by citations per academic. Our citation levels place us amongst the top 1% of universities in the world are the 7th highest in the England (QS World University Ranking – September 5th 2011).

Contact us

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The Department of Mathematics

The course is delivered by the Department of Mathematics and benefits from **expertise offered by** research active academic staff and tutors who are professionals from the actuarial and financial sector. The Department of Mathematics is a leading centre for mathematical research and this research feeds directly into our teaching and course development. This enables students to learn from those **leading developments in your field**, and to benefit from cutting-edge research as it occurs. The University has an **excellent reputation** for distance learning course provision as well **outstanding student satisfaction** records for over 20 years.

Why Study Actuarial Science at the University of Leicester?

Do you enjoy solving problems? Do you enjoy analysing and interpreting large amounts of data and applying this analysis to real business situations? Could you communicate complex facts and financial and risk models to people at a range of levels?

A career as an actuary is a highly rewarding one – both financially and intellectually. Actuaries are problem-solvers; business analysts; consultants and risk assessors, all rolled into one. Your skills will be applied in the worlds of insurance; pensions; healthcare; banking; business management and risk assessment. You will use your mathematical and statistical knowledge and problem-solving skills to help businesses and institutions to evaluate the long-term financial implications of the decisions they make.

Our Actuarial Science programme is the only distance learning course accredited by the **Faculty and Institute of Actuaries**. The University enjoys strong links with the Faculty and Institute and has developed the programme through this close working relationship. The Department and University enjoys **links with the financial industry**, ensuring that course developments address employer's needs, and that all our students develop the skills required by key employers.

You will be able to make full use of the University's **teaching and research experience** in your studies, ensuring you benefit from our revised approach to actuarial teaching than other providers whilst providing you with the ability to fit studying around your current employment and lifestyle. Many of our experienced course tutors are Fellows of the Faculty and Institute of Actuaries, which ensures students benefit from gaining experience and advice from an academic and professional perspective. Our research and teaching experience and our role as a major provider of distance learning education, place the University of Leicester in an excellent position to deliver this course.

“ I would thoroughly recommend the course to other students because the programme is well organised and structured. The Department of Mathematics have good experience in managing the course and providing support to distance learning students. ”

Charles Tawdros
Corporate & Actuarial
Services Manager,
Allianz Life Assurance
company (Egypt)

Course Information

Aims and Objectives

- To provide you with detailed and specialised knowledge and a critical understanding of best practice within the field of actuarial science.
- To enable you to apply your newly gained knowledge and skills into your workplace.
- To develop your independent learning skills and your transferable skills.
- To help to extend and develop your career plan and pursue your own professional development.
- To provide you with a fully accredited qualification which provides exemptions from the professions current Core Technical (CT) 1-8 examinations.
- To provide you with a structured programme of study covering all CT1-8 content.

Course Outline

The course offers trainee actuaries, recent graduates looking to enter the industry and those looking for a career change, a head start within this rewarding career. The Postgraduate Diploma course is studied by distance learning and takes two years to complete consisting of eight compulsory modules. To obtain the Master's degree up to a further 12 months of study can be undertaken to complete a dissertation.

Course Structure

Start dates: May and October each year

Course duration: Postgraduate Diploma 24 months, MSc up to 36 months

Each year is split into two teaching sessions, in each of which you'll study two modules concurrently, completing four modules a year. At the end of each pair of modules you will be assessed by a final written examination before progressing into the next teaching session. Successful completion of four modules will allow progression to year two of your studies.

The diagram below shows the route of study you will follow depending on your joining month for the course.



*The Postgraduate Certificate will only be awarded if you decide to exit the course after successfully completing the first 4 modules. However, please note that no exemptions from the Faculty and Institute's CT examinations will be granted.

Course Modules

The course covers the current CT examination syllabus set by the Faculty and Institute of Actuaries and a small amount of additional financial mathematics that will better prepare you for some of the later professional examinations. The compulsory modules are described below along with the corresponding CT syllabus they cover. The following modules may be updated for the October 2012 entry.

Year One

Statistics (CT3) At the end of this module you will be able to understand and apply the concepts of statistical inference; linear regression models; analysis of variance; generalized linear models and data graduation.

Financial Mathematics (CT1 & CT8) This module will enable you to understand the concept of time value of money and enable you to apply relevant actuarial notation to analyse cashflows, know the basic concepts of probability and stochastic processes and use this knowledge to develop simple financial models.

Actuarial Mathematics (CT4) At the end of this module you will understand the concepts and mathematics of survival modelling; understand relevant actuarial notation and apply to survival dependent cashflows; develop simple statistical models of transfers between multiple states.

Finance and Financial Reporting (CT2) At the end of this module you will be able to understand and discuss the principle terms used in investment and asset management; demonstrate an awareness of the key principles in finance; describe and interpret the accounts of companies; show how financial techniques can be used in the assessment of capital investment projects.

Year Two

Financial Engineering (CT6 & CT8) This module will develop your skills and understanding of the main concepts of stochastic analysis and stochastic differential equations and be able to use



these in financial models; explain the concepts of Monte Carlo simulation and understand its application to option pricing; understand the main concepts of time series analysis.

Risk (CT1 & CT6 & CT8) At the end of this module you will be able to describe the risk characteristics of financial instruments; show an understanding of the term structure of interest rates and the link to immunisation theory; describe alternative measures of risk; develop optimal portfolios within the MVPT framework; work with loss distribution functions; describe and apply techniques for analysing and projecting the ultimate position in actuarial products.

Contingencies (CT5) At the end of this module you will be able to use relevant actuarial notation to value assurances, annuity contracts and related actuarial products; understand and apply the

concepts of reserving; discuss the principle factors that contribute to the variability of mortality and morbidity in a population.

Economics (CT7) At the end of this module you will understand and be able to discuss the key concepts in macro and micro economics.

Year Three (optional)

MSc Dissertation

The Master's dissertation will not provide any further exemptions from the profession's examinations but will provide the opportunity to study a topic of your choice in-depth under the expert guidance of a leading academic in the field. This will help you to develop important specialist and transferable skills crucial to your future career.



Student Profile

“The main reason I decided to study was to progress my career. Having just finished my time at university, this course offered me the perfect opportunity to progress through the first 8 professional exams in an academic environment that I was familiar with. It made the transition from university to work place study a lot easier.”

“I am currently working within the pensions industry and therefore the work I have done on annuities, interest rates and mortality has definitely accelerated my development at work.”

“Managing a work/life/study balance is difficult at times; but having tutors who always understood work pressures and gave me the support required to maximise my chance of progressing steadily through the course, was really great. Having a course director and course administrator who overlook all your studies and ensure things run smoothly is fantastic.”

“The support you receive from the University is paramount to understanding the notes and making progress through the exams, coupled with the knowledge that a tutor is on hand is really reassuring, I'd highly recommend this course to anyone wanting to consider a career in the actuarial profession.”

David Winter is currently working as a Trainee Actuarial Analyst for Mercer Ltd (Belfast)

Your Learning Experience

Course Delivery

The course will be delivered to you through supported distance learning via the University's virtual learning environment Blackboard. You will need to make sure that you have regular access to the Internet in order that you can interact fully with Blackboard. The use of Blackboard enables you to benefit from visualisations of key concepts, electronic forums and podcasts. A number of podcasts will be released which will summarise the content and provide further description of some of the concepts within each subject. The online resources are divided into natural chapters of self-contained material and you will be guided through each chapter at a suitable pace. Each chapter will be concluded by a series of short self-test questions with full solutions and examination style practice questions.

In addition the course notes will be made available in paper format and despatched to you at the start of each teaching session, allowing you to keep studying away from your computer when needed.

The course is self-contained and all of the recommended reading and supporting material is provided either electronically or in paper format, no

additional materials are required. Should you wish to read more broadly you will have access to the University library which has available a large number of e-journals and e-books.

Study commitment

Studying this course by distance learning means you don't need to take a career break to get ahead. You can study the course at a time that suits you in a location that suits you; it also means that you can start to apply your new knowledge and insights to your working life immediately. For each of the compulsory modules we'd recommend students dedicate 7 hours a week, meaning an average of 15 hours a week per teaching session will be required to fully engage with the course.

The Master's dissertation is an individual project and will require you to commit time to researching a topic in detail; many of our students choose to tackle work-related topics in their dissertations. This can be rewarding both personally and for your employer. Whilst this is an independent piece of work you should commit 600 hours of study to complete the research and present your findings over a period of up to 12 months.



Each module includes a series of exam style questions at the end of each chapter for students to attempt and obtain feedback. Whilst these are non-assessed they are an important part of your progress enabling you and the tutor to check that you have understood the topic. The tutor will provide written feedback on each submission to help you better prepare for the final examination. On average each module contains 10-12 sets of exam style questions for submission, meaning you will be encouraged to submit work on a fortnightly basis for feedback.

Supporting your studies

The University of Leicester has vast experience in providing distance learning education and in the specific needs of distance learning students. This enables us to develop a strong network of support which will be available to you if and when you should need it. Information on how to access this support will be available from the course administration team and through the online support for the course.

As a student you will be supported by a dedicated team of actuarial tutors and administrative staff. The programme administrator will be your first point of contact and can provide you with most

of your course information; any academic issues will be directed to your personal tutor or module tutor. Your personal tutor will be an academic member of staff who will be able to offer advice and guidance throughout your studies and will be assigned to you for the duration of your studies.

Upon starting the Master's dissertation you will be allocated a supervisor who will guide you on your choice of topic and support you through your research. They'll offer regular virtual supervisory sessions, using telephone or web-based tools at suitable points in your studies.

Visiting Leicester

As a University of Leicester student you are entitled to visit the campus at any time and to make use of the facilities, although if you wish to see a particular member of staff you would be encouraged to make arrangements for this in advance. Whilst the course is self-contained as online learning there is the option to attend an on campus study session in the lead up to the examination periods, for which there is a small charge. The study sessions are designed to be complementary to, rather than a necessary part of the course and students unable to attend any of the sessions are not disadvantaged.

Assessment

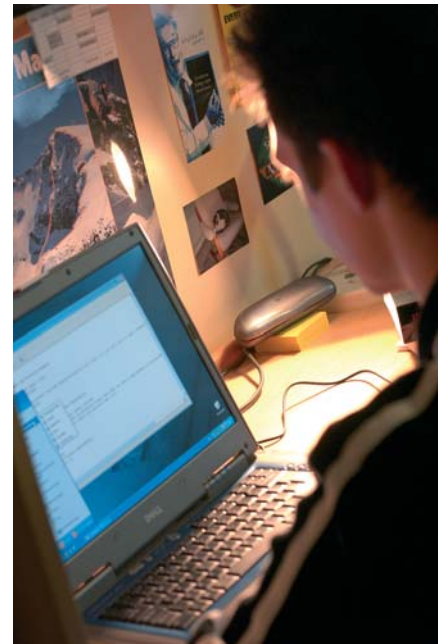
The eight compulsory modules will each be assessed via one three-hour unseen examination. All examinations take place in April and October each year following the period of module study. Exact dates will be released to students at the start of each teaching session. All examinations will be sat at a venue local to you approved and arranged by us from a wide selection we have available around the world. We endeavour to find a venue most suitable for you based on your current location.

The Master's dissertation will be assessed on the production of an individual written dissertation of approximately 15,000 words and two presentations. Your presentations will require the production of a PowerPoint slide show in conjunction with a video conference or alternative online communication with your supervisor and other staff in the department.

Professional Accreditation

The eight compulsory modules form the accreditation agreement from the Faculty and Institute of Actuaries (FIA) CT1-8 examinations. Successful completion of the postgraduate diploma consisting of the eight compulsory modules with an overall average of 65% or more will provide you with exemption from CT1-8 with the FIA. Individual exemptions can be awarded to those students who successfully complete the Postgraduate Diploma with an overall average lower than 65% at the discretion of the FIA examiners. Confirmation of successful exemptions will be communicated to students at the end of the course of study. Upon completion of the course your exemption certification can be claimed directly from the FIA. To do so you will need to become a student member.





Careers

The programme offers you the opportunity to work towards your full fellowship of the FIA based on the completion of the first stage of the professional examinations and also progress your career. You will be able to demonstrate the skills, knowledge and expertise acquired through the programme in your place of work or at interview.

You will be equipped with the skills and knowledge to evaluate and interpret different forms data, analyse risk and present your results to a professional audience. You will acquire an understanding of how to apply this knowledge to real problems using the fundamental techniques required by an actuary.

Careers Service

As a Leicester student you will also be able to make use of the University Careers Service. They are well positioned to offer you guidance and support at any time during your time with us. Their huge range of programmes and awards

are specifically designed to help you get ahead in your chosen career.

1. Succeed in Your Studies

If you are returning to education, we know that getting to grips with styles of learning can be a challenge. However it is important if you are going to get the most out of your degree. The Careers Service's Learning Development team provides you with a range of services and resources to help you extend and develop your academic skills through workshops, online resources and individually tailored advice.

2. Gain Experience

In a competitive jobs market, having that little bit extra can make all the difference. At Leicester you can build on your talents and add to your CV with a number of employability programmes and awards offered by the Careers Service including the online version of our Leicester Award.

3. Develop Your Career

If you are looking for a change of direction in your working life the Careers Service offers a wide range of one-to-one careers consultations, workshops and webinars covering interview and assessment centre skills, psychometric testing and CVs, covering letters and application forms.

“The course helped me to understand actuarial concepts faster and at the same time apply them at real-life work. This, opened-up an opportunity for me to gain a new actuarial role at a new place of work.”

Assistant Manager, Actuarial Services, HNB Assurance Plc,
Sri Lanka

Entry Requirements

Applicants will normally hold a 2:1 honours degree (or the equivalent, e.g. GPA 3.0) in a relevant science based subject. We expect a certain prerequisite knowledge of probability and calculus; this means students will be Mathematics, Statistics or Physics graduates. Applicants from other academic disciplines will be considered on a case by case basis and may be subjected to mathematics assessment at the application stage.

If English is not your first language you will need to satisfy the University's English requirements. As well as internationally-known IELTS and TOEFL tests, the university also accepts other evidence of English language ability. More details can be found online at: www.le.ac.uk/englishskills

English Language Requirements

The usual requirement is a score of 6.0 on the British Council IELTS test, or its equivalent taken in the last three years. We can arrange for you to take an English test through the University's English Language Teaching Unit at a very reasonable cost. Further details of this option will be sent to you at the offer stage.

Prior learning

If you currently hold exemptions from the CT1-8 syllabus you can still complete the course and transfer in a maximum of two exemptions, subject to matching against the course modules. If you hold equivalent exemptions from overseas actuarial associations you may also be eligible for exemption from modules based on prior learning. This will be assessed at application stage. Any transfer in of credits would reduce the number of modules required for the completion of the course and may reduce your total period of study. Those modules not offered as one-to-one correspondence to a CT subject can not be excluded from the course and must be studied.

How to apply

To apply online [click here](#) and use the drop down menu on the right hand side of the page (beneath the heading "Apply Now Online") to select your country of origin and intended start date (May or October). Clicking "Apply" will transfer you to our online application portal where you can begin your online application, you will be required to register as a new user should you not have applied to the University at any stage in the past. You will also be prompted to submit supporting documents as part of your online application form. The documents that we require to assess your application are:

- Your degree transcript;
- Your degree certificate;
- Proof that you meet the university's English language requirements (if necessary).

For fuller details on payment methods, instalment payments and payment deadlines please visit our website www.le.ac.uk/maths/postgraduate-study/msc. You can speak to a member of our dedicated administration team by telephoning us on **+44 (0)116 252 2612** They will talk you through the application process and guide you on what steps you will need to take, in order receive an offer to study.

Fees

The fees below cover the full cost of the course, including all study materials and despatch, tutor support and examinations.

Payment can be made in full at the start of your studies, at the start of each year of the course or in three instalments per year. Our preferred method of payment is through our secure online payments system but we are also happy to receive payments via cheque, bank transfer and over the phone.

Start Date	MSc Fee	Postgraduate Diploma Fee
May 2012	£11,520	£9,610
October 2012	£12,270	£10,235
May 2013	£12,270	£10,235

These fees are for all students, with the exception of those living in some Caribbean countries who may be charged in US Dollars.

Our fees are reviewed and updated on an annual basis and you are advised to check our website before completing your application for the most up to date information about fees.

Payment Options

You will have the option to pay:

1. Your full tuition fee course on initial registration or
2. Half of your course fee on initial registration (the final half of your course fee will be due on the anniversary of your initial registration) or
3. Over six instalments over your registration period

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