

IFAM

Institute for Financial and Actuarial Mathematics

**Department of Mathematical Sciences
University of Liverpool**

**Worldwide Non-Business School
Actuarial Science Rankings
Nr. 5**

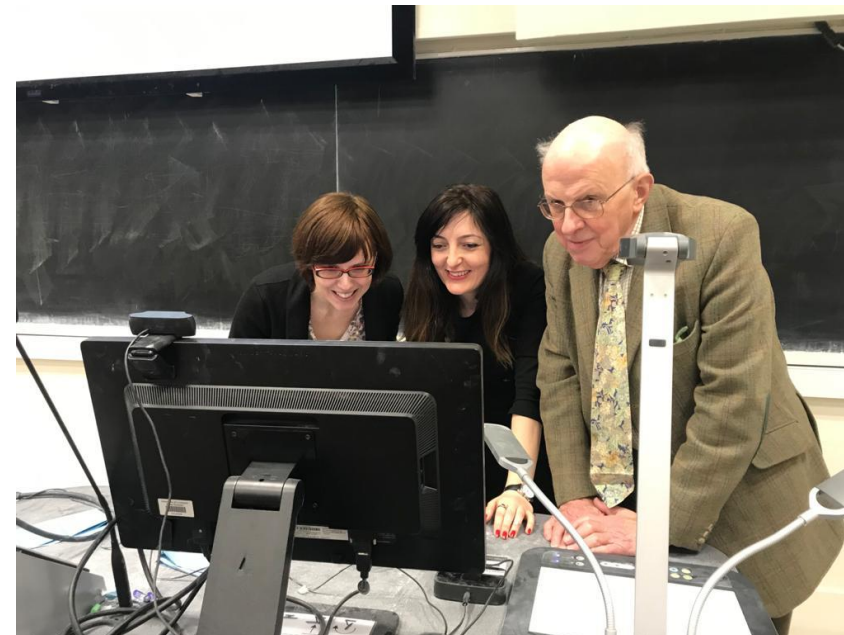
The Institute for Financial and Actuarial Mathematics (IFAM) is a group of young and enthusiastic academics specialized in actuarial and financial mathematics.



We are part of the Department of Mathematical Sciences at
University of Liverpool.



Our published research in actuarial science places us on the **5th position worldwide**, among all, non-business, actuarial science departments, while our actuarial education is accredited by the Institute and Faculty of Actuaries.



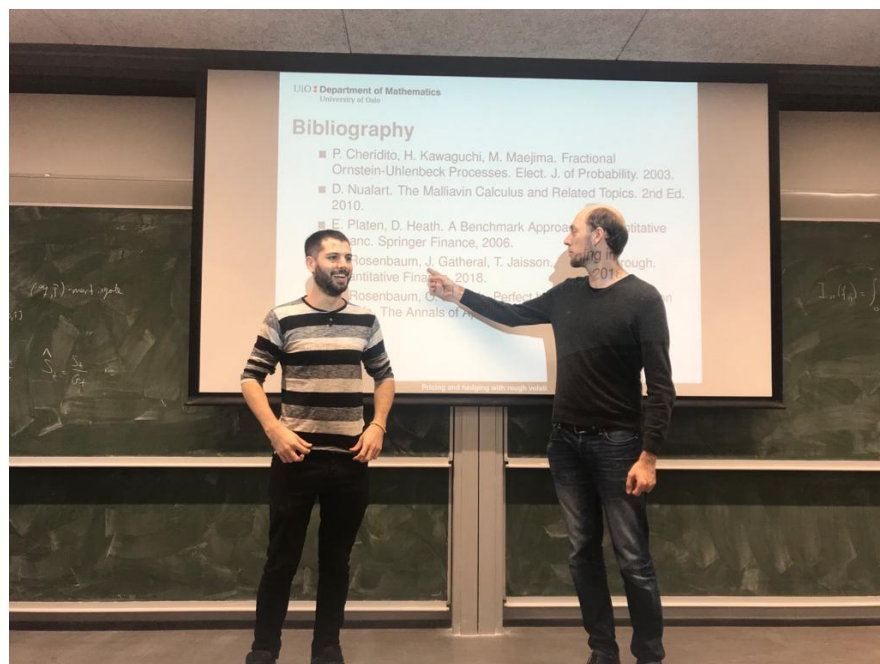
IFAM members engage in partnership with industry and academics and **involve students** in their research pursuits.



In our **actuarial and financial mathematics programmes**, we offer a wide range of topics, providing a strong foundation for a successful career in **banks, insurance companies, consultancy firms, software companies, research institutions, government agencies** or any other risk management enterprise.



IFAM hosts regular Conferences, Workshops and research Seminars



We support and mentor our students throughout their studies, when transitioning from school to university and further when transitioning from university to society. All of these add up in a **88% success rate of employment, or further studies, within six months of graduation. For UK-based undergraduate, this number rises to 95%.**



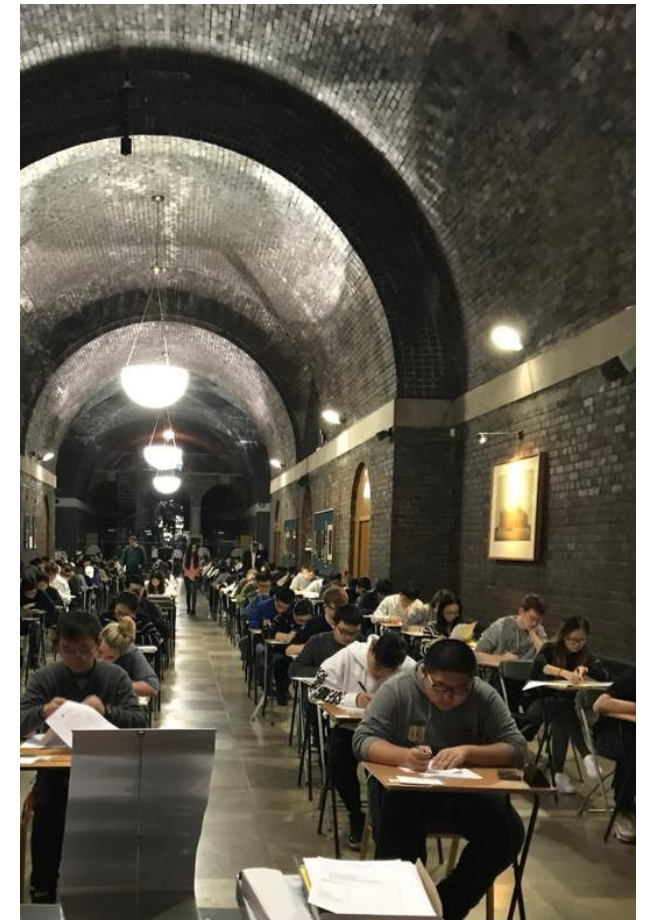
IFAM MSc and PhD Students always engage with our UG students on both teaching and research



Our summer projects are built upon **cross generational interactions**, undergraduate with postgraduate students, **working alongside local businesses** and **IFAM academics**.



We offer two accredited programmes
G1N3 - Mathematics with Finance
NG31 - Actuarial Mathematics



G1N3 - Mathematics with Finance

In the first two years of this programme, you will study a range of topics covering important areas of mathematics. The main focus will be on basic financial mathematics, statistics and probability, no assumptions are made about whether or not you have previously studied these, or have previous experience in the use of computers. In the last year, you will cover some specialised work in financial mathematics. Subsequently, you will begin to study more advanced ideas in probability theory and statistics as well as stochastic modelling, econometrics and finance.

YEAR 1

Required Modules				
Module Code		Title	Credits	Semester
ACFI	101	Introduction to Financial Accounting	15	First Semester
MATH	111	Mathematical IT Skills	15	First Semester
MATH	101	Calculus 1	15	First Semester
MATH	103	Introduction to Linear Algebra	15	First Semester
ACFI	103	Introduction to Finance	15	Second Semester
MATH	122	Newtonian Mechanics	15	Second Semester
MATH	102	Calculus II	15	Second Semester
MATH	162	Introduction to Statistics	15	Second Semester

G1N3 - Mathematics with Finance

YEAR 2

Required Modules				
Module Code		Title	Credits	Semester
ACFI	213	Corporate Financial Management	15	First Semester
ACFI	290	Financial Reporting & Finance	15	First Semester
MATH	201*	Ordinary Differential Equations (*cannot be taken by XJTLU students)	15	First Semester
MATH	267	Theory of Interest	15	First Semester
MATH	262	Financial Mathematics	15	Second Semester
MATH	263	Statistical Theory And Methods I	15	Second Semester
MATH	264	Statistical Theory And Methods II	15	Second Semester
Choose 1 further module in the second semester (*XJTLU students choose 2 further modules, one from each semester)				
MATH	227	Mathematical Models: Microeconomics and Population Dynamics	15	First Semester
MATH	241	Metric Spaces and Calculus	15	First Semester
MATH	261	Introduction To Methods Of Operational Research	15	First Semester
COMP	229	Introduction to Data Science	15	First Semester
MATH	268	Operational Research: Probabilistic Models	15	Second Semester
ECON	241	Securities Markets	15	Second Semester
MATH	224*	Intro to the Methods of Appl Maths (*cannot be taken by XJTLU students)	15	Second Semester
MATH	266	Numerical Methods	15	Second Semester

G1N3 - BSc in Mathematics with Finance

YEAR 3

Required Modules				
Module Code		Title	Credits	Semester
ACFI	314	Quantitative Business Finance	15	First Semester
MATH	362	Applied Probability	15	First Semester
MATH	371	Numerical Analysis for Financial Mathematics	15	Second Semester
MATH	372	Time Series and its Applications in Economics	15	Second Semester
MATH	377	Financial and Actuarial Modelling in R	15	Second Semester
Choose 3 further modules of which at least 2 must be MATH modules and 1 further module from each semester				
ECON	212	Econometrics I	15	First Semester
MATH	323	Further Methods Of Applied Mathematics	15	First Semester
MATH	363	Linear Statistical Models	15	First Semester
MATH	367	Networks In Theory And Practice	15	First Semester
MATH	365	Measure Theory and Probability	15	First Semester
ACFI	310	Derivative Securities	15	First Semester
ACFI	341	Finance & Markets	15	Second Semester
MATH	331	Mathematical Economics	15	Second Semester
MATH	360	Applied Stochastic Models	15	Second Semester
MATH	361	Theory Of Statistical Inference	15	Second Semester
MATH	366	Mathematical Risk Theory	15	Second Semester
Modules accredited by the Institute & Faculty of Actuaries UK				

Our summer research projects emulate the everyday life of a math graduate, facilitating the development of practical skills and the understanding of the importance of mathematics in the modern world.



For the last four summers, students from the Department of Mathematical Sciences of University of Liverpool have worked alongside Liverpool businesses assessing various risks and threats. During the summer of 2017, the students worked with Charles Oddy on enterprise risk management, with SatSafe on pricing drivers behaviour, with Eddie Stobart on networks optimization, and with Barnett Waddingham in analyzing non-financial risks of universities. Dr Corina Constantinescu, director of the Institute of Financial and Actuarial Mathematics (IFAM) of the Department of Mathematical Sciences of University of Liverpool and coordinator of the programme says "our UG students are highly motivated to answer real-work questions and to see mathematical theory applied into practice. For the last four years, we run summer research projects, led by our IFAM academics and their PhD students, in cooperation with Liverpool business partners, aiming to assess some of the risk they are facing in the ever changing economical

landscape. We work on providing methods, data analysis or risk management solutions varying from strategic planning recommendations to personalised insurance." Charles Oddy, CFA, CERA, says "this was my second summer working alongside University of Liverpool students and academics and I am impressed by their enthusiasm and professionalism. The interns represent excellent ambassadors for the university". Stuart Millward, CEO of SatSafe Technologies, "Working with the students on this project was an absolute privilege and the quality of work was testament to the extremely high standards of Liverpool University's Department of Mathematical Sciences". Prof. Kurt Langfeld, Head of Department of Mathematical Sciences explains "our students experience is of paramount importance for our department. Partnering with our UG students and Liverpool businesses in research is not only a success story for our Department and our university, but also for the city of Liverpool."

Students of
**University of
Liverpool**
work with **Liverpool
businesses** in
assessing risks



"Working with the students on this project was an absolute privilege and the quality of work was testament to the extremely high standards of Liverpool University's Department of Mathematical Sciences."

NG31 - BSc in Actuarial Mathematics

Actuarial mathematics prepares students to be professionals who use mathematical models to analyse and solve financial problems under uncertainty. Actuaries are experts in the design, financing and operation of insurance plans, annuities, and pension or other employee benefit plans.

In Year Three, you will cover some specialised work in advanced actuarial and financial mathematics. Subsequently, you start to study more advanced ideas in both life and non-life insurance mathematics as well as stochastic modelling, econometrics and finance. This programme is designed to prepare you for a career as an actuary, combining financial and actuarial mathematics with statistical techniques and business topics.

Year 1

Required Modules				
Module Code		Title	Cred	Semester
ECON	127	Economic Principles for Business and Markets	15	First
MATH	111	Mathematical IT Skill	15	First
MATH	101	Calculus 1	15	First
MATH	103	Introduction to Linear Algebra	15	First
ACFI	103	Introduction to Finance	15	Second
MATH	167	Theory of Interest	15	Second
MATH	102	Calculus II	15	Second
MATH	162	Introduction to Statistics	15	Second

NG31 - BSc in Actuarial Mathematics

Year 2

Required Modules				
Module Code		Title	Cred	Semester
ACFI	290	Financial Reporting & Finance	15	First
ECON	210	Principles of Economics II	15	First
MATH	253	Statistics and Probability I	15	First
MATH	273	Life Insurance Mathematics I	15	First
MATH	262	Financial Mathematics	15	Second
MATH	254	Statistics and Probability II	15	Second
Choose 2 further modules in the second semester from the list below				
MATH	221	Differential Equations (cannot be taken by XJTLU students)	15	Second
MATH	242	Metric Spaces and Calculus	15	Second
MATH	256	Numerical Methods	15	Second
MATH	269	Operational Research with Group Projects	15	Second

NG31 - BSc in Actuarial Mathematics

Year 3

Required Modules				
Module Code		Title	Cred	Semester
MATH	362	Applied Probability	15	First
MATH	373	Life Insurance Mathematics II	15	First
MATH	375	Stochastic Modelling in Insurance & Finance	15	First
MATH	366	Mathematical Risk Theory	15	Second
MATH	374	Statistical Methods in Insurance and Finance	15	Second
MATH	376	Actuarial Models	15	Second
MATH	377	Financial and Actuarial Modelling in R	15	Second
Choose 1 further module in the first semester from the list below				
MATH	391	Summer Industrial Research Project (takes place during summer between 2 nd and 3 rd year)	15	First

NG31 and G1N3 BSc Programmes

Institute and Faculty of Actuaries (IFoA) accreditation



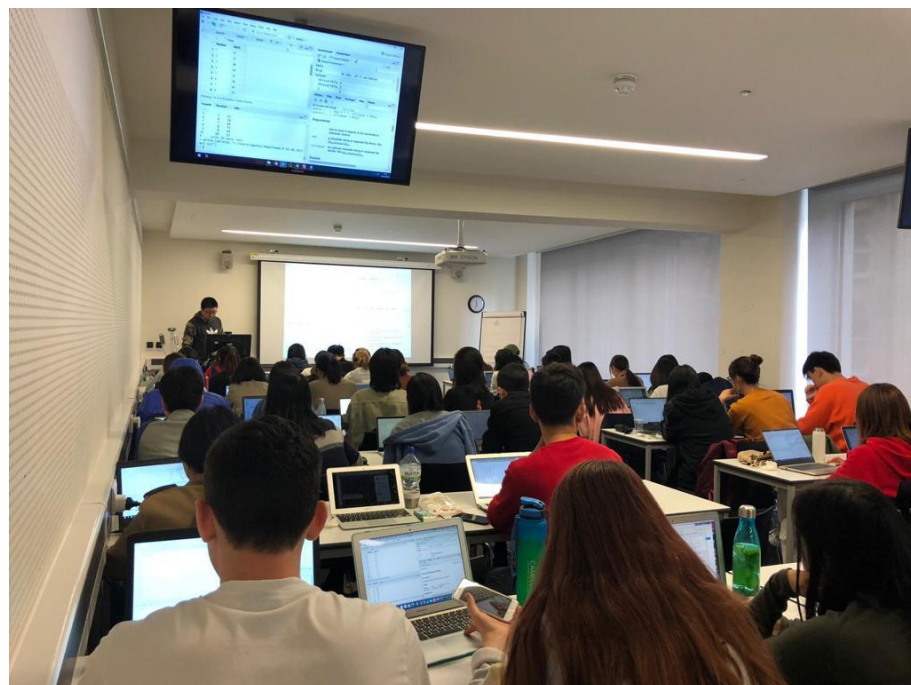
NG31 and G1N3 BSc Programmes

Institute and Faculty of Actuaries (IFoA) accreditation

Exemptions for our programmes

BSc Mathematics with Finance (G1N3): CB1, CS1 , CM2

BSc Actuarial Mathematics (NG31): CB1, CB2, CS1, CS2, CM1, CM2



For further details, please see our website. If you have any questions do not hesitate to write us an email.

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www.liverpool.ac.uk/ifam

