Course Information Sheet for entry in 2016-17

MSc in Mathematical and Computational Finance

About the course

The course provides you with a strong mathematical background with the skills necessary to apply your expertise to the solution of real finance problems. You will develop skills so that you are able to formulate a well posed problem from a description in financial language, carry out relevant mathematical analysis, develop and implement an appropriate numerical scheme and present and interpret these results.

The course lays the foundation for further research in academia or for a career as a quantitative analyst in a financial or other institution.

You will take three introductory courses in the first week. The introductory courses cover partial differential equations, probability and statistics and MATLAB.

The first term focuses on compulsory core material, offering 80 hours of lectures and 40 hours of classes/practical. The core courses are as follows:

- Stochastic Calculus
- Financial Derivatives
- Numerical methods I - Monte-Carlo
- Numerical methods I - Finite Differences
- Statistics and financial data analysis
- Financial Programming with C++ 1

In the second term, three streams are offered; each stream consists of 32 hours of lectures and 16 hours of classes/practical. The 'Tools' stream is mandatory and you will also take either the 'Modelling' stream or the 'Data-driven' stream.

Modelling stream

- Exotic derivatives
- Stochastic volatility, jump diffusions
- Commodities
- Fixed income
- Credit derivatives

Data-driven stream

- Asset pricing and inefficiency of markets

- Market microstructure and trading
- Algorithmic trading
- Advanced financial data analysis
- Econometrics of volatility
- Machine learning

Tools stream

- Numerical methods 2 - Monte Carlo methods
- Numerical methods 2 - Finite differences
- Calibration
- Optimisation
- Introduction to stochastic control

As well as the streams, the course offers a compulsory one-week (24 hours of lectures) intensive module on quantitative risk management which is to be held in/around the week before the third term.

The third term is dedicated to a dissertation project which is to be written on a topic chosen in consultation with your supervisor.

The second component of the financial computing course, 'Financial Computing with C++ 2' (24 hours of lectures and practicals in total), is held shortly after the third term.

The examination will consist of the following elements:

- two written examinations and one take-home project, each of two hours duration - the written examinations will cover the core courses in mathematical methods and numerical analysis
- a written examination on the ‘Modelling’ stream or a written examination and a computer-based practical examination on the 'Data-driven' stream
- a written examination assessing the ‘Tools’ stream
- a take-home project assessing the course in quantitative risk management
- two practical examinations assessing two courses in financial computing with C++.

Changes to courses

The University will seek to deliver each course in accordance with the descriptions set out above. However, there may be situations in which it is desirable or necessary for the University to make

changes in course provision, either before or after registration. For further information, please see the University's Terms and Conditions.

Expected length of course

10 months

Annual fees for entry in 2016-2017

Fee Status	Tuition fee	College fee	Total annual fees
Home/EU (including islands)	£26,370	£2,933	£29,303
Overseas	£26,370	£2,933	£29,303

The fees shown above are the annual tuition and college fees for this course for entry in the 2016-17 academic year; for courses lasting longer than one year, please be aware that fees will usually increase annually. For details, please see our guidance on likely increases to fees and charges.

Tuition and college fees are payable each year for the duration of your fee liability (your fee liability is the length of time for which you are required to pay tuition and college fees).

Additional cost information

There are no compulsory elements of this course that entail additional costs beyond fees and living costs. However, as part of your course requirements, you may need to choose a dissertation, a project or a thesis topic. Please note that, depending on your choice of topic and the research required to complete it, you may incur additional expenses, such as travel expenses, research expenses, and field trips. You will need to meet these additional costs, although you may be able to apply for small grants from your department and/or college to help you cover some of these expenses.

Living costs

In addition to your fees, you will need to ensure that you have adequate funds to support your living costs for the duration of your course.

The likely living costs for 2016-17 are published below. These costs are based on a single, full-time graduate student, with no dependants, living in Oxford. We provide the cost per month so you can multiply up by the number of months you expect to live in Oxford.

	Likely living costs for 1 month		**Likely living costs for 9 months**		**Likely living costs for 12 months**	
	Lower range	Upper range	Lower range	Upper range	Lower range	Upper range
Food	£265	£298	£2,384	£2,673	£3,177	£3,565
Accommodation	£469	£667	£4,221	£6,002	£5,627	£8,006
Personal items	£119	£244	£1,073	£2,187	£1,429	£2,915
Social activities	£60	£107	£539	£960	£718	£1,280
Study costs	£36	£73	£314	£661	£418	£880
Other	£19	£44	£197	£410	£265	£547
Total	£970	£1,433	£8,727	£12,894	£11,636	£17,191

When planning your finances for any future years of study in Oxford beyond 2016-17, you should allow for an estimated increase in living expenses of 2% each year.

More information about how these figures have been calculated is available at www.ox.ac.uk/admissions/graduate/fees-and-funding/living-costs.

10 December 2015