

# INTRA Programme

## B.Sc. Financial & Actuarial Mathematics



**The Objective** of this four-year, full-time degree is to produce graduates with the ability to apply Mathematical methods to the problems of the financial and insurance sectors. The application of such techniques has revolutionised many areas of these industries over the last fifteen years.

Students who attain high standards in any of a range of specified modules offered on this programme may be recommended for exemption from all of the first series of examinations of the Faculty of Actuaries and the Institute of Actuaries (Core Technical examinations).

### Programme Summary:

The course is of four years' duration and falls naturally into two halves. In the first four semesters (i.e. Years 1 and 2), the aim of the programme is to provide the student with a broad introduction to the main branches of modern mathematics and its applications, enabling students to make informed decisions regarding their choice of specialist topics in the latter half of the course. In the second half (Years 3 and 4), the course concentrates on those areas of mathematics that may be applied to problems in finance, insurance and banking, and in particular on the methods of actuarial mathematics.

### Relevant Work Experience

Students in the degree have the opportunity of gaining experience as an employee in a commercial environment through DCU's work experience programme INTRA (INTEgrated TRAIning). INTRA is a central feature of education at DCU and an integral part of most undergraduate and some postgraduate degree programmes. Students who are particularly interested in pursuing an actuarial career often take their work placement with a major insurance company. Many students who wish to follow a career in finance or banking are placed with commercial or investment banks.

**Students from the B.Sc. Financial & Actuarial Mathematics are required to complete an eight month INTRA placement at the end of third year, from February to September inclusive.**

### Work Areas

Students will have the ability to work in the following areas:

- Life assurance
- Insurance
- Investment and commercial banking
- Financial analysis and trading
- Business and actuarial consultancy
- Statistical analysis
- Software development

### Student Availability

Students are available for interview from October onwards. Please post vacancies on the *INTRA on line* web site at [www.intra.dcu.ie](http://www.intra.dcu.ie), or send details to:

INTRA Unit, Student Support & Development,  
Dublin City University,  
Glasnevin, Dublin 9, Ireland.  
Phone: 00 353 1 700 5033 Fax: 00 353 1 700 5505  
Website: [www.intra.dcu.ie/intra](http://www.intra.dcu.ie/intra)

# B.Sc. Financial & Actuarial Mathematics

## YEAR 1

### Semester 1

- Linear Algebra I
- Analysis I
- Computer Programming I
- Economics for Actuaries I

### Semester 2

- Linear Algebra II
- Analysis II
- Computer Programming II
- Economics for Actuaries II
- Introductory Statistics

## YEAR 2

### Semester 1

- Calculus of Several Variables
- Computational Mathematics I
- Mathematical Statistics I
- Probability I
- Accounting I

### Semester 2

- Fourier Analysis
  - Mathematical Statistics II
  - Probability II
  - Accounting II
  - Introduction to Mathematics of Finance
- choose one of the following**
- Complex Analysis
  - Computational Mathematics II
  - Introduction to Differential Equations

## YEAR 3

### Semester 1

- Stochastic Modelling
- choose three of the following**
- Algebra
  - Modern Analysis
  - Sampling Theory and Survey Design
  - Financial Mathematics
  - Risk Theory
  - Actuarial Modelling

## INTRA

## YEAR 4

### Semester 1

- Probability & Finance I
- choose three of the following**
- Time Series
  - Life Contingencies I
  - Financial Economics I
  - Numerical Linear Algebra
  - Partial Differential Equations
  - Project and Project Skills

### Semester 2

- choose four of the following**
- Life Contingencies II
  - Financial Economics II
  - Probability and Finance II
  - Financial Engineering
  - Dynamical Systems
  - Modelling with Partial Differential Equations
  - Coding and Cryptography
  - Monte Carlo Methods in finance