

This is archived information. Please visit <http://www.maths.manchester.ac.uk> for current course unit information

## **MATH20912**

Introduction to Financial Mathematics

<b>Unit code:</b>	MATH20912
<b>Credit Rating:</b>	10
<b>Unit level:</b>	Level 2
<b>Teaching period(s):</b>	Semester 2
<b>Offered by</b>	School of Mathematics
<b>Available as a free choice unit?:</b>	N

### **Requisites**

None

### **Aims**

The course unit unit aims to enable students to acquire active knowledge and understanding of some basic concepts in financial mathematics including stochastic models for stocks and pricing of contingent claims.

### **Overview**

This course is intended to serve as a basic introduction to financial mathematics. It gives a mathematical perspective on the valuation of financial instruments (futures, options, etc.) and their risk-management. The purpose of the course is to introduce students to the stochastic techniques employed in derivative pricing.

### **Assessment methods**

- Other - 20%
- Written exam - 80%

### **Assessment Further Information**

- Coursework; Weighting within unit 20%
- 2 hours end of semester examination; Weighting within unit 80%

## **Learning outcomes**

On completion of this unit successful students will be able to price financial derivatives

## **Future topics requiring this course unit**

Third level courses in financial mathematics.

## **Syllabus**

1. Overview of basic concepts in securities markets.
2. Stochastic models for stock prices.
3. Hedging strategies and managing market risk using derivatives.
4. Binomial option pricing model.
5. Risk-neutral valuation, replication and pricing of contingent claims.
6. Black-Scholes analysis.
7. Interest rate models.

## **Recommended reading**

- J. Hull, Options, Futures and Other Derivatives, 7th Edition, Prentice-Hall, 2008.
- P. Wilmott, S. Howison and J. Dewynne, The Mathematics of Financial Derivatives: A Student Introduction, Cambridge University Press, 1995

## **Feedback methods**

Tutorials will provide an opportunity for students' work to be discussed and to provide feedback on their understanding.

## **Study hours**

- Lectures - 22 hours
- Tutorials - 11 hours
- Independent study hours - 67 hours

## **Teaching staff**

Paul Johnson - Unit coordinator