## Course Specification Form

**Department/School:** Mathematics  
**Academic Session:** 2015-16

### Course Title: Advanced Financial Mathematics

**Course Code:** MT3480  
**Course Value:** 0.5 unit  
**Course JACS Code:** G100  
**Availability:** Term 2  
**Status:** Mandatory for Finance & Mathematics; optional for all other programmes. Condonable

### Pre-requisites: MT3470

### Co-requisites: -

### Co-ordinator: -

### Course Staff: -

### Aims:

- To investigate the validity of various linear and non-linear time series occurring in finance;
- To extend the use of stochastic calculus to interest rate movements and credit rating.

### Learning Outcomes:

1. Make use of some of the ARCH (autoregressive conditionally heteroscedastic) family of models in time series;
2. Appreciate the ideas behind the use of the BDS test and the bispectral test for time series;
3. Understand the partial differential equation for interest rates and the assumptions that lead to it;
4. Be able to model forward and spot rates;
5. See how to model the prices for certain exotic options.

### Course Content:


### Teaching & Learning Methods:

- The total number of notional learning hours associated with this course are 150.  
  - 3 hours of lectures a week over 11 weeks. 33 hours total.  
  - 117 hours of private study, including work on problem sheets and examination preparation. This may include discussions with the course leader if the student wishes.

### Key Bibliography:

- Paul Wilmott Introduces Quantitative Finance – P Wilmott (Wiley 2007) Library reference 332.632 WIL

### Formative Assessment & Feedback:

- Formative assignments in the form of 8 problem sheets. The students will receive feedback as written comments on their attempts.

### Summative Assessment:

- **Exam:** 100 % Written exam. A two hour paper.

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The information contained in this course outline is correct at the time of publication, but may be subject to change as part of the Department’s policy of continuous improvement and development. Every effort will be made to notify you of any such changes.