Financial Market Modelling and Analysis (COMP0075)

**Description**

**Aims:**
This module will introduce students to the field of modelling and analysing financial markets with emphasis on (i) the wide variety of deterministic and discrete-time methods that are available; and (ii) numerical simulation of the financial markets, including agent-based modelling. The module will start with a broad introduction to financial markets and terminology used in the financial markets.

**Learning outcomes:**
On successful completion of the module, a student will be able to:
1. distinguish between different types of modelling and analysis, and explain the advantages and disadvantages of each method;
2. understand discrete-time dynamic optimisation methods;
3. understand numerical simulation methods, including both agent-based techniques and the use of recurrence relations;

**Content:**
Introduction to the Financial Markets:
- Market Microstructure;
- Order-driven and Quote-driven markets;
- Orders, Quotes and Trades;
- Post-trade processing;
- Regulation;
- Trading Strategies;
- Risk Management; Markets:
- Auctions;
- Markets;
- Dealer Markets and Order-Book Markets;
- Market Making;
- Low latency and High Frequency Trading; Introduction to Techniques:
- Game Theory;
- Minority Games;
- Agent Based Models;
- Dynamic Optimisation; Specific models:

**Key information**

| Year | 2019/20 |
| Credit value | 15 (150 study hours) |
| Delivery | PGT L7, Campus-based |
| Reading List | View on UCL website |
| Tutor | Dr Chris Clack |
| Term | Term 2 |
| Timetable | View on UCL website |

**Assessment**

- Written examination (main exam period): 100%

**Find out more**

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)
- Day and Juang
- Bulls, Bears and Market Sheep;
- Lyons
- The Foreign Exchange Hot Potato;
- Huang et al
- Optimal Market Making with Risk Aversion;

Requisites:
In order to be eligible to select this module, a student must be registered on a programme for which it is a formally-approved option or elective choice AND must have (i) a UK-equivalent Honours Degree (or higher) in the field of Computer Science, Mathematics, Statistics, Physics, Engineering, or another similar quantitative subject; (ii) a strong background with high performance in mathematics; and (iii) English Language at the UCL Good level.