Operational Risk Measurement for Financial Institutions (COMP0044)

Aims:
The module aims to familiarise students with key concepts in the measurement and management of operational risk in the financial services. It will help them to understand the current issues and challenges faced by the sector, from a methodological, regulatory and systemic standpoint. By detailing the most current debates in the field, the module aims at allowing the students to subsequently become positive agents of solutions in the market place and in research in operational risk measurement and modelling.

Learning outcomes:
On successful completion of the module, a student will be able to:
1. Discuss, select and apply the relevant methods to address issues in the assessment, measurement and aggregation of operational risk exposure;
On successful completion of the module, students will have a sound understanding of:
1. the applications of essentials of data analysis and statistical estimation to operational risk measurement;
2. the methods of scenario analysis, stress testing and regulatory capital assessment;
3. the limitations of operational risk modelling and the ways to address them;
4. some of the essential features of operational risk management in financial institutions and how quantification can support decision-making.

Content:
The module is intended to introduce applied statistics and data analytics to operational risk measurement and management in the financial services. The module is primarily focused on the techniques, impacts and benefits of using relevant methods to support effective risk management in banks and insurance companies. The syllabus consists of the following parts:
- Operational Risk Scope and Regulation: Regulation on operational risk, Capital and consequences for the financial

Key information
- Year: 2019/20
- Credit value: 15 (150 study hours)
- Delivery: PGT L7, Campus-based
- Reading List: View on UCL website
- Tutor: Dr Ariane Chapelle
- Term: Term 1
- Timetable: View on UCL website

Assessment
- Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of June 2019. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
industry. Large events and loss overview;
-Operational Risk data analysis: Internal and External loss data, distribution, tail risk, reporting and insights to seek from loss data regarding upcoming risks;
-Scenario analysis and stress testing: Scenario identification and assessment process; Probabilities of rare events; Fault trees and event trees; Mixing quantitative and qualitative data. Stress testing Capital and financial robustness. Bayesian Techniques in operational risk;
-Risk correlations and indicators: Identification and selection of risk drivers. Correlations and determinants of losses;
-Risk aggregation and diversification: Aggregating data from different sources, loss generating mechanisms, scaling and filtering of data. Copula-based approach for risk diversification; extreme value theory. Remaining issues in operational risk modelling;
-Upcoming trends in operational risk analysis; how machine learning and big data can help understanding causes and effect of non financial risks.

**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.

Students with an economic or financial background tend to understand the concepts covered more easily, since the module applies to activities performed in the financial industry. Equally, students with a statistical background will be adequately equipped to understand easily the lectures relating to estimation and distributions.
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Assessment

Coursework: 50%
Written examination (departmentally managed): 25%
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