Module title: Insurance and Big Data

Please note this module description is preliminary and is subject to change.

Module code: [Module code] Providing Department: ICMA Centre
Level: 7 Number of credits: 10
Term(s) in which taught: Spring Number of ECTS credits: 5
Module convenor: TBC

Summary module description:
The availability of unprecedented amounts of data made available by ever increasing computing power and data storage capacity, widespread use of Internet of Things devices, and powerful communications networks, have led to major changes in the insurance industry. The services it provides, how they are offered to its customers and at what price, and insurance risk analysis are undergoing rapid innovations. In this module you will learn how the evolution of the sector is unfolding and gain insights to the challenges and opportunities that it is generating.

Aims:
The module focuses on (1) insurable risks and legal principles of insurance (2) types of insurance (3) insurers’ business model and intermediaries (4) big data applications in insurance risk analysis, marketing and pricing (5) InsurTech startups and the current industry landscape (6) Insurance regulation and new ethical considerations (7) big data and insurance forecasting models.

Intended learning outcomes:
Assessable learning outcomes:
By the end of the module it is expected that students will:
Understand the principles of insurable risks and the legal basis for insurance contracts
Be familiar with the main types of insurance and the business model used by insurers
Understand how the insurance industry is evolving and the new products, services and business models brought about by current technological changes
Understand how big data are being used in the insurance industry and its applications in insurance risk analysis, marketing and pricing
Be familiar with selected insurance forecasting models in life insurance, property insurance and fraud detection
Be aware of the regulatory environment and new ethical challenges resulting from the availability and use of big data in the insurance market
**Additional outcomes:**
The module will use in-class case studies showing actual applications of big data in the insurance industry.

**Outline content**

1. Introduction to insurance
   a. Insurance and risk transfer
   b. Legal principles of insurance
   c. Types of insurance
   d. Insurance process: brokers, underwriters and reinsurers

2. The use of big data in the insurance industry
   a. Risk analysis
   b. Marketing
   c. Personalised pricing
   d. Internet of Things applications

3. The new insurance industry landscape: InsurTech startups

4. Big data and insurance forecasting
   a. Life insurance, health insurance and pensions: life expectancy predictions
   b. Property insurance: cost and likelihood of flood damage, predicting subsidence, fire claims, hail storms, hurricane damage
   c. Fraud detection

5. New regulatory and ethical challenges

6. Case studies

**Global context (where appropriate):**
The material covered in this module discusses current developments in the insurance industry worldwide.

**Brief description of teaching and learning methods:**
The core theory and concepts will be presented during lectures. Problem sets will be solved in workshops.

**Contact hours:**

<table>
<thead>
<tr>
<th></th>
<th>Autumn</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Seminars</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tutorials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project supervision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical classes and workshops</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Supervised time in studio/workshop
Fieldwork
External visits
Work-based learning
Guided independent study 85
Placement
Year abroad
Total hours by term 100
Module total hours (10 credit module = 100 hours) 100

Summative Assessment Methods (%) - work which contributes towards the overall module mark:

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written assignment, including essay</td>
<td></td>
</tr>
<tr>
<td>Dissertation</td>
<td></td>
</tr>
<tr>
<td>Set exercise</td>
<td></td>
</tr>
<tr>
<td>Portfolio</td>
<td></td>
</tr>
<tr>
<td>Project output (other than dissertation)</td>
<td></td>
</tr>
<tr>
<td>Oral assessment and presentation</td>
<td></td>
</tr>
<tr>
<td>Practical skills assessment</td>
<td></td>
</tr>
<tr>
<td>Report</td>
<td>50</td>
</tr>
<tr>
<td>In-class test administered by School</td>
<td>50</td>
</tr>
<tr>
<td>Written examination</td>
<td></td>
</tr>
</tbody>
</table>

Summative assessment- Examinations:

Summative assessment- Coursework and in-class tests:

Students will be asked to complete an individual report (50%) to be submitted in week 9 of the spring term, and an in class multiple choice tests (30%) in week 8 of the spring term.

Formative assessment methods:

Seminar questions are assigned for each class. The seminar leader will facilitate discussion and offer feedback.

Penalties for late submission:

Penalties for late submission on this module are in accordance with the University policy. Please refer to page 5 of the Postgraduate Guide to Assessment for further information: http://www.reading.ac.uk/internal/exams/student/exa-guidePG.aspx

Assessment requirements for a pass:

50% weighted average mark

Reassessment arrangements:
By individual report, to be submitted in August/September

THE INFORMATION CONTAINED IN THIS MODULE DESCRIPTION DOES NOT FORM ANY PART OF A STUDENT'S CONTRACT.