**Course Details**

**Course Code:** F71AG  
**Full Course Title:** Risk Theory  
**SCQF Level:** 11  
**SCAF Credits:** 15  
**Available as Elective:** No

**Delivery Level**

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<th>Yes</th>
<th>Postgraduate Taught</th>
<th>Yes</th>
<th>Postgraduate Research</th>
<th>No</th>
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**Additional Information:**

**Course Aims**

To provide an introduction to risk theory as applied to insurance processes and problems

To teach students methods of assessing premiums for short term insurance policies.

To introduce students to simple methods of claim reserving

**Learning Outcomes – Subject Mastery**

After studying this course, students should be able to:

- Explain and apply the concepts of conditional expectation and compound distribution
- Calculate probabilities and moments of loss distributions
- Construct and use collective and individual risk models
- Explain the properties of and apply some simple premium calculation principles
- Describe and apply the fundamental concepts of Bayesian statistics
- Describe and apply the fundamental concepts of credibility theory
- Explain a simple no claims discount system
- Describe the problems of reserving in short term insurance, explain run-off triangles and calculate outstanding claim reserves using simple models
- Explain what is meant by the surplus for an insurance process; define and understand probabilities of ruin
- Simulate data from specified distributions

**Learning Outcomes – Personal Abilities**

At the end of the course, students should be able to:

- Demonstrate the ability to learn independently
F71AG Risk Theory

- Manage time, work to deadlines and prioritise workloads
- Use an appropriate computer package to process data
- Present results in a way which demonstrates that they have understood the broader issues of risk theory

SYLLABUS

- Loss distributions
- Aggregate risk model and individual risk model
- Risk sharing – simple reinsurance and deductibles
- Premium calculation principles
- Bayesian estimation and credibility theory
- Experience rating – No Claims Discount Systems
- Ruin Theory
- Claims reserving – run-off triangles
- Simulation

LOCATION AND ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>Edi</th>
<th>SBC</th>
<th>Ork</th>
<th>Dub</th>
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<td>60</td>
<td>120</td>
<td>Assessment</td>
<td>Semester 2</td>
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Examination will be at least 60% and no more than 80%.

| Y   |     |     |     |       |     |      |     |     | Examination | 100    | 120       | Reassessment | Semester 2 |

Re-assessment in the next academic year.

| Y   |     |     |     |       |     |      |     |     | Coursework | 40     |          | Assessment | Semester 2 |

Coursework will be at least 20% and no more than 40%.