1. **Title of the module**

MACT7350 - Actuarial Mathematics.

1. **School or partner institution which will be responsible for management of the module**

School of Mathematics, Statistics and Actuarial Science

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 7

1. **The number of credits and the ECTS value which the module represents**

30 credits (15 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn, Spring and Summer Terms

1. **Prerequisite and co-requisite modules**

Co-requisite: MACT7509 Financial Mathematics

1. **The programmes of study to which the module contributes**

MSc in Actuarial Science (including programme with an Industrial Placement), International Masters in Applied Actuarial Science (including programme with an Industrial Placement)

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**

8.1. describe, interpret and discuss mathematical techniques used to model and value cashflows which are contingent on mortality and morbidity risks;

8.2. show a comprehensive understanding of the complex techniques applicable to solve problems in actuarial mathematics;

8.3. demonstrate a critical appreciation of recent developments in Actuarial Mathematics and the links between the theory of Actuarial Mathematics and their practical application.

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**

9.1 apply a logical mathematical approach to solving complex problems including cases where information/data is not complete;

9.2. demonstrate skills in communication to both technical and non-technical audiences;

9.3. demonstrate skills in the use of relevant information technology;

9.4. demonstrate skills in time management, organisation and studying so that tasks can be planned and implemented at a professional level.

1. **A synopsis of the curriculum**

The aim of this module is to provide a grounding in the principles of modelling as applied to actuarial work – focusing particularly on deterministic models which can be used to model and value cashflows which are dependent on death, survival, or other uncertain risks. The module will include coverage of equations of value and its applications, single decrement models, multiple decrement and multiple life models. This module will cover a number of syllabus items set out in Subject CM1 – Actuarial Mathematics published by the Institute and Faculty of Actuaries.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

Students on the programmes listed in section 7 are provided with the study notes published by the Actuarial Education Company for Subject CM1 – Actuarial Mathematics.

The following may be used for background reading:

Dickson, D.C.M., et al, Actuarial Mathematics for Life Contingent Risks 3rd edition (Cambridge University Press 2020)

1. **Learning and teaching methods**

Total contact hours: 96

Private study hours: 204

Total study hours: 300

1. **Assessment methods**
   1. Main assessment methods

Assessment 1 In-course test - 1 hour 5%

Assessment 2 Excel computing exercise - 1.5 hours 10%

Assessment 3 In-course test - 1 hour 5%

Assessment 4 Excel computing exercise - 1.5 hours 10%

Examination 3 hours 70%

The coursework mark alone will not be sufficient to demonstrate the student’s level of achievement on the module.

13.2 Reassessment methods

Like-for-like

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** |  | 8.1 | 8.2 | 8.3 | 9.1 | 9.2 | 9.3 | 9.4 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |
| Private Study |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Lectures |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |
| Examination |  | **x** | **x** | **x** | **x** | **x** |  | **x** |
| Assessments 1 and 3 |  | **x** | **x** | **x** | **x** | **x** |  | **x** |
| Assessments 2 and 4 |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

1. **Inclusive module design**

The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **Internationalisation**

Actuarial Science is an international subject with techniques developed and refined by actuaries, mathematicians and statisticians across the globe. Mastery of the subject-specific learning outcomes (section 8) will equip students to apply the techniques of this module in a wide range of international contexts. The module team is drawn from the School of Mathematics, Statistics and Actuarial Science, which includes many members of staff with international experience of teaching and research.

Examples with an international dimension are included in the module where appropriate.

The support SMSAS provides to its students is also internationally attuned given our international student body.

**FACULTIES SUPPORT OFFICE USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 26/11/2019 | Minor | September 2020 | 5, 6, 7, 8, 11 |  |
|  |  |  |  |  |