1. **Title of the module**

MACT9230 (MA923) - Introduction to Actuarial Research

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**

15 credits (7.5 ECTS)

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

Autumn and Spring

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

MACT9210 Actuarial Risk Management 1 and MACT9530 Communications are co-requisite modules.

Students are expected to have covered material equivalent to modules MACT3190 and MAST5010.

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

MSc in Applied Actuarial Science also with an Industrial Placement and International Masters

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

8.1. produce technical and scientific documentation and present reports on actuarial analysis at a professional level using LaTex;

8.2. demonstrate high level skills in relevant computing utilities and the statistical package R;

8.3. select suitable statistical methods for data analysis, evaluate model accuracy and develop models relevant to research questions, and interpret the results appropriately;

8.4. demonstrate comprehensive knowledge and understanding of topical research areas in actuarial science which are not covered in detail in taught modules;

8.5. apply a range of mathematical, statistical and actuarial methodologies in a particular topical area of actuarial research;

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

9.1. demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing analysis of unfamiliar material at a professional level;

9.2. use and develop relevant computing skills at a high level, including use of appropriate document preparation and word-processing packages;

9.3. demonstrate the ability to communicate conclusions clearly to an appropriate audience;

9.4. demonstrate a capability for independent research and problem solving skills;

9.5. demonstrate intellectual independence through the exercise of initiative and personal responsibility, and an ability for independent learning and time management required for continuing professional development;

9.6. demonstrate an ability to select material from source texts, either recommended to or found by the student, and show critical awareness of the relationship of the material to background and to more advanced material.

1. **A synopsis of the curriculum**

**Scientific word-processing and computing**: Students are introduced to, and gain experience of, the main computing utilities currently used in the School and across campus which are relevant to the module. Scientific word-processing will be taught using LaTex. Students will also be introduced to the statistical software R, and refresh their knowledge of statistical methods relevant to actuarial research.

**Topics in advanced topical actuarial research**: Students will be introduced to areas of actuarial research which are topical and are of interest to the actuarial profession. This may include, but is not limited to, advanced topics on financial risk management, mortality models and adverse selection.

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

Thomas, R.G. (2017) Loss Coverage: Why Insurance Works Better with Some Adverse Selection. Cambridge University Press.

Sweeting, P. (2011). Financial Enterprise Risk Management. Cambridge University Press.

Cairns, A.J.G., Blake, D., Dowd, K., Coughlan, G.D., Epstein, D., Ong, A., and Balevich, I. (2009) A quantitative comparison of stochastic mortality models using data from England and Wales and the United States. North American Actuarial Journal 13(1): 1-35.

Porteous, B. and Tapadar, P. (2005). Economic Capital and Financial Risk Management for Financial Services Firms and Conglomerates. Palgrave Macmillan.

1. **Learning and teaching methods**

Total contact hours: 26

Private study hours 124

Total study hours: 150

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

Computing Assessment (Take home assessment, approximately 15-20 hours) 60%

In class test 1 In-course test 1 hour 20%

In class test 2 In-course test 1 hour 20%

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* | *8.4* | *8.5* | *9.1* | *9.2* | *9.3* | *9.4* | *9.5* | *9.6* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |
| Lectures & meetings | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Private study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |
| In-class test 1 | **x** | **x** | **x** |  |  |  | **x** | **x** |  |  |  |
| In-class test 2 | **x** | **x** | **x** |  |  |  | **x** | **x** |  |  |  |
| Computing Assessment |  | **x** | **x** | **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.

In compiling the reading list, consideration has been given to the range of texts that are available internationally and a selection of texts has been identified to complement the delivery of the material.

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) |
| 23/11/2018 | Major | September 2019 | 6, 8, 10, 11, 12, 13 |  |
|  |  |  |  |  |

Revised FSO Jan 2018