1. **Title of the module**

MAST3004 (MA364) - Mathematical Skills

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 3

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 or Autumn and Spring

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

Pre-requisite: None

Co-requisite: MAST3001 (Foundation Mathematics 1)

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

BSc Mathematics with a Foundation Year, BSc Actuarial Science with a Foundation Year, BSc Data Science with a Foundation Year

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

8.1 develop and support simple arguments in oral or written form;

8.2 use the Library and other sources in support of their learning;

8.3 demonstrate a reasonable ability to plan and develop an interview article;

8.4 show judgement in the selection and presentation of material to communicate with both specialist and non-specialist audiences.

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

Demonstrate an increased ability to:

9.1 manage their own learning and make use of appropriate resources;

9.2 understand logical arguments, identifying the assumptions made and the conclusions drawn;

9.3 communicate straightforward arguments and conclusions reasonably accurately and clearly;

9.4 manage their time and use their organisational skills to plan and implement efficient and effective modes of working;

9.5 solve problems relating to qualitative and quantitative information;

9.6 make use of information technology skills such as online resources (Moodle), internet communication;

9.7 communicate technical material competently;

9.8 work as a member of a team.

9.9 demonstrate an increased level of skill in numeracy and computation.

1. **A synopsis of the curriculum**

Students will be introduced to key mathematical skills, necessary in studying for a mathematics degree: use of the University Library and other sources to support their learning, present an argument in oral or written form, learn about staff in the School and beyond, etc. In particular, students will study various techniques of proof (by deduction, by exhaustion, by contradiction, etc.). These techniques will be illustrated through examples chosen from various areas of mathematics (and, in particular, co-requisite modules).

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

Mathematical texts will depend on the coursework set. The following texts are recommended in conjunction with the workshops:

Stephen G. Krantz, A Primer of Mathematical Writing, A.M.S., 1997.

Kevin Houston, How to think like a mathematician: a companion to undergraduate mathematics, C.U.P., 2009.

1. **Learning and teaching methods**

Total contact hours: 26

Private study hours: 124

Total study hours: 150

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

Assessment 1 Written work involving library sources (approx. 2 pages) Pass/Fail

Assessment 2 Oral presentation (approx. 5 minutes) Pass/Fail

Assessment 3 Exercises involving proof, requiring on average between 10 and 15 hours to complete Pass/Fail

Assessment 4 Group project - Interview article (approx. 3 pages) Pass/Fail

If a student fails any of assessments 1-4, an additional assessment task (pass/fail) will be set to allow the student to demonstrate the relevant module learning outcomes.

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 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 | 9.6 | 9.7 | 9.8 | 9.9 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Private Study and Assessment | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Lectures/Exercise classes | X |  |  |  |  | X | X |  | X |  | X | X |  |
| Workshops | X | X | X | X |  |  | X | X |  | X |  |  | X |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Oral Presentation | X | X |  | X | X |  | X |  |  | X | X | X |  |
| Exercises | X |  |  |  | X |  | X |  | X | X | X | X |  |
| Written Work | X | X |  | X | X | X | X |  |  | X | X | X |  |
| Interview Article |  | 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**

Mathematics is an international language with techniques developed and refined by mathematicians across the globe. Mastery of the subject-specific learning outcomes, 8.1 to 8.4, will equip students to apply the theories and 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 collaboration.

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.

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

**DIVISIONAL 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 delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
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