1. **Title of the module**

MAST0018 – Exploring the Mathematical Sciences

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

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 investigate with guidance a topic in mathematics and/or statistics;

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

8.3 demonstrate the capability to solve problems in accordance with the basic theories and concepts of the relevant topics in mathematics and/or statistics;

8.4 make appropriate use of Maple.

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able 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 and Maple;

9.7 demonstrate skill in numeracy and computation.

1. **A synopsis of the curriculum**

This module introduces the students to the basics of Maple and three topics in the mathematical sciences. The precise topics will vary in any particular year. Potential topics include (for example): history and/or people active in the mathematical sciences, algorithms, engaging the public in the mathematical sciences, mathematical games. Each topic is supported by a series of workshops introducing key aspects of the topic.

Maple: the Maple environment, basic commands, basic calculus, curve sketching.

There is no specific mathematical syllabus for the topics part of the module.

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

Mathematical texts will depend on the projects offered in any particular year. The following texts are recommended in conjunction with the Maple sessions:

Understanding Maple, I. Thompson, Cambridge University Press (2018) Ebook

An Introduction to Modern Mathematical Computing, J. Borwein and M. Skerritt, Springer (2011).

Heck, *Introduction to Maple*, Springer, 3rd edition, 2003. Ebook

1. **Learning and teaching methods**

Total contact hours: 16

Private study hours: 134

Total study hours: 150

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

Maple assessment, involving exercises requiring on average between 10 and 15 25%

hours to complete

Project 1 assessment involving exercises requiring on average between 10 and 15 25%

hours to complete

Project 2 assessment involving exercises requiring on average between 10 and 15 25%

hours to complete

Project 3 assessment involving exercises requiring on average between 10 and 15 25%

hours to complete

13.2 Reassessment methods

Like-for-like

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section 12) 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 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |
| Private Study and Assessment | X | X | X | X | X | X | X | X | X | X | X |
| Maple classes | X |  |  | X |  |  | X |  |  | X |  |
| Workshops | X |  | X |  |  | X | X |  | X |  | X |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |
| Coursework | X | X | X |  | X |  | X |  |  | X | X |
| Maple coursework |  |  |  | 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 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) |
| 1/11/19 |  | 2020/21 | All, new module |  |
|  |  |  |  |  |