1. **KentVision code and title of the module**

MAST0017 – Foundation Algebra and Functions

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

Division of Computing, Engineering and Mathematical Sciences (CEMS)

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 and/or any module restrictions**

Pre-requisite: None

Co-requisite: None.

1. **The course(s) of study to which the module contributes**

Compulsory to the following courses: BEng Mechanical Engineering including a Foundation Year, BEng Electronic and Computer Engineering including a Foundation Year, BEng Biomedical Engineering including a Foundation year, BSc Physics with a Foundation Year, BSc Physics with Astrophysics with a Foundation Year, BSc Astronomy, Space Science and Astrophysics with a Foundation Year.

Compulsory to the following courses, if student does not have an A-Level equivalent qualification: BSc Mathematics 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 demonstrate understanding of the basic body of knowledge associated with algebraic manipulations and elementary functions;

8.2 demonstrate the capability to solve problems in accordance with the basic theories and concepts in the following areas, whilst demonstrating a reasonable level of skill in calculation and manipulation of the material: algebra and elementary functions;

8.3 apply the basic techniques associated with algebra and elementary functions in several well-defined contexts;

8.4 demonstrate a mathematical proficiency suitable for stage 1 entry.

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 demonstrate skill in numeracy and computation.

1. **A synopsis of the curriculum**

Algebra: simplifying expressions and rearranging formulae, indices, surds, algebraic fractions, quadratic equations and the discriminant, completing the square and turning points of quadratics, simultaneous equations, inequalities, manipulating and factorising polynomials, polynomial long division, binomial expansions, exponentials and logarithms, equations involving exponentials, partial fractions.

Functions and graphs: sketching and recognising the graphs of elementary functions (powers of x, exponential, etc.) and the modulus function, the link between algebra and geometry, roots, points of intersection of curves, simple graph transformations.

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

The University is committed to ensuring that core reading materials are in accessible electronic format in line with the Kent Inclusive Practices.

The most up to date reading list for each module can be found on the university's [reading list pages](https://kent.rl.talis.com/index.html).

1. **Contact Hours**

Contact Hours: 37

Private Study: 113

Total: 150

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

Assessment 1 Exercises, requiring on average between 10 and 15 hours to complete 20%

Assessment 2 Exercises, requiring on average between 10 and 15 hours to complete 20%

Examination 2 hours 60%

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 outcomes against learning and teaching methods:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 | 9.6 |
| Private study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Lectures and example class activity | **x** | **x** | **x** | **x** |  | **x** | **x** |  | **x** | **x** |
| Revision classes | **x** | **x** | **x** | **x** |  | **x** | **x** |  | **x** | **x** |

**Module learning outcomes against assessment methods:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 | 9.6 |
| Examination | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Coursework | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

1. **Inclusive module design**

The Division 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) |
| 1/11/2019 |  | 2020/21 | All- new module |  |
| July 2023 | Minor | September 2023 | 13 |  |