

FP097-30 Advanced Foundation Mathematics and Statistics

26/27

Department

Warwick Global Academy

Level

Foundation

Module leader

Paul Goodhead

Credit value

30

Module duration

25 weeks

Assessment

50% coursework, 50% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module extends students' skills in applying advanced mathematical and statistical methods to scientific and engineering problems. It emphasises building, applying, and reviewing models, with a focus on real-world applications that require both further mathematics and statistical reasoning. Students will gain confidence in using advanced processes and techniques, equipping them for degree-level study in mathematics-based subjects. By the end of the module, students will be able to use advanced mathematics and statistics to model, analyse, and interpret complex problems in science and engineering.

[Module web page](#)

Module aims

Students will develop understanding of statistical and further maths concepts and processes so that students become confident in their use and application. By the end of the module they will be able to use statistical and further mathematics principles in the analysis and solution of real world problems in the sciences and engineering.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Algebra: Modulus and Quadratic Inequalities, Polynomial factorisation, Trigonometry, Binomial Theorem, Sequence & Series, Matrices, Vector Geometry, Euler's Theorem & DeMoivre's Theorem, Complex roots.

Calculus: Applications of derivatives, Taylor's series, Applications of integration in area, volume, arc-length, Numerical Integration, First and Second order Ordinary Differential Equations, Partial differentiation.

Statistics & Probability: Data representation, Correlation and regression, probability, probability distribution, Data analysis, Hypothesis testing.

Learning outcomes

By the end of the module, students should be able to:

- Analyse problems and use mathematical and statistical knowledge to plan strategies for solving them.
- Select and apply a range of mathematical and statistical tools and techniques that are appropriate to solve a given problem.
- Create and use appropriate mathematical and statistical models to solve and understand practical real-life problems, in appropriate contexts.
- Construct and present arguments through appropriate use of logical deduction and precise statements involving correct use of symbols and appropriate statistical and further mathematical language.
- Communicate effectively solution to the given real world problem by employing mathematical terminology and notations.
- Evaluate the outcomes and predictions of a mathematical model by considering any assumptions made, and its validity and limitations.

Indicative reading list

[Reading lists can be found in Talis](#)

Interdisciplinary

Students will have opportunities to draw on knowledge and skills acquired within the different modules on their pathway.

International

All students are international, representing a wide range of cultural, linguistic, and educational

backgrounds. They bring diverse experiences and perspectives, enriching discussion and supporting the development of intercultural awareness. Examples for analysis and evaluation are drawn from a variety of countries, ensuring that teaching and learning are embedded in an international context.

Subject specific skills

Students will have opportunities to:

construct and present mathematical and logical arguments,
convert real-world problems taken from financial and economical contexts into mathematical problems,
solve mathematical problems using appropriate advanced techniques including using suitable technology when appropriate,
clearly present solutions to mathematical and statistical problems using appropriate symbols and terms.

Transferable skills

Transferable skills will include: problem solving skills, analytical and logical thought processes and appropriate use of suitable technology

Study

Study time

Type	Required
Seminars	25 sessions of 4 hours (33%)
Private study	140 hours (47%)
Assessment	60 hours (20%)
Total	300 hours

Private study description

Extra class reading of books and learning materials on Moodle in preparation for seminars.
Weekly worksheets.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group C

	Weighting	Study time	Eligible for self-certification
Assessment component			
Class Test 1	25%	15 hours	No
Term 1 Theory Test Relevant formulae will be provided within the questions/Formula sheet will be provided. Only university approved calculators are permitted in this examination.			

Reassessment component is the same

Assessment component			
Class Test 2	25%	15 hours	No
A closed book in class test testing material covered studied to this point and not covered by class test 1			

Reassessment component is the same

Assessment component			
Final Examination	50%	30 hours	No
Formula sheet will be provided. Only university approved calculators are permitted in this examination.			

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- Answerbook Gold (24 page)
 - Students may use a calculator

Reassessment component is the same

Feedback on assessment

Feedback on Tabula

[Past exam papers for FP097](#)

Availability

There is currently no information about the courses for which this module is core or optional.