

WM160-15 Applied Maths I

24/25

Department

WMG

Level

Undergraduate Level 1

Module leader

Negar Riazifar

Credit value

15

Module duration

14 weeks

Assessment

60% coursework, 40% exam

Study locations

University of Warwick main campus, Coventry Primary

Distance or Online Delivery

Description

Introductory description

As digital technology systems undergo constant evolution, the utilisation of advanced mathematical and statistical tools proves instrumental in facilitating progress from foundational enhancements to achieving excellence. This module provides the foundation for the use of mathematical and statistical concepts to solve a myriad of data-related problems. Providing a robust foundation, the module describes the concepts essential for comprehensive data analysis, data visualisation, data interpretation and effective data modelling.

[Module web page](#)

Module aims

This module aims to equip students with the mathematical knowledge and skills to analyse, model and solve problems in digital and information systems. Students will apply key mathematical and statistical concepts to address challenges associated with data, enhancing their capabilities in both problem-solving and decision-making contexts.

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.

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- Introduction to data.
- Sampling techniques.
- Descriptive statistics.
- Probability concepts.
- Random variables.
- Statistical distributions (Continuous and Discrete).
- Hypothesis testing.
- Regression and correlation.

Learning outcomes

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

- Identify mathematical and statistical methods for problem solving and data modelling and discuss the quantitative results. [CITP: 2.1.9]
- Apply a range of statistical tools and techniques to solve problems in various systems. [AHEP:4 - C1]
- Explain the results of quantitative data analysis and interpret them in a meaningful way for decision making. [CITP: 2.1.9]
- Demonstrate practical skills in implementing statistical analyses through the utilization of applicable software packages. [AHEP:4 - C1]

Indicative reading list

- R. Peck, *Statistics: Learning from Data*, Cengage (2024), ISBN: 0357758293, 9780357758298.
- W. J. DeCoursey, *Statistics and Probability for Engineering Applications with Microsoft Excel*, Newnes (2003), ISBN: 0750676183, 9780750676182.
- C. A. Gorini, *Master Math: Probability*, Course Technology Cengage Learning (2012), ISBN: 1435456564, 9781435456563
- C. Chatfield, *Problem Solving: A Statistician's Guide*, CRC (2017), ISBN: 1482224208, 0429158750, 9781482224207, 9780429158759.
- S. L. Weinberg, D. Harel, S. K. Abramowitz, *Statistics using R : An Integrative Approach*, Cambridge University Press (2021), ISBN: 9781108719148.

[View reading list on Talis Aspire](#)

Subject specific skills

This module covers KSBs from new standard mapping. Apprentices are expected to gain/improve on the following:

- Principles of data management and data analysis for digital and technology solutions (K13).
- Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions (S11).
- A strong work ethic and commitment in order to meet the standards required (B1).
- Clear mathematical communication.
- Use of software to support decision making.

Transferable skills

Apprentices are expected to gain/improve on the following:
 Problem-solving; critical thinking; communication; professionalism;

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	10 sessions of 1 hour (7%)
Online learning (independent)	8 sessions of 1 hour (5%)
Other activity	2 hours (1%)
Private study	50 hours (33%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

- Pre-module work given on Moodle to encourage flipped learning approach.
- Self-guided study: revision on module contents, solution of additional exercises, and supplementary materials.
- Study and advanced use of software packages.
- Teams/forum for discussing queries with course peers and tutor (asynchronous).

Other activity description

Online support session to help struggling students.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group D3

	Weighting	Study time	Eligible for self-certification
Post Module Assignment	60%	36 hours	Yes (extension)
This assessment includes mathematical and statistical discussion and analysis based on given data, incorporating equations, formulas, figures, tables, and screenshots to present the obtained results. A structured proforma, a predefined document, guides students to provide detailed and organized responses to specific questions or prompts within designated sections.			
Examination	40%	24 hours	No
This assessment is designed to evaluate proficiency in mathematical and statistical techniques to solve problems.			

Feedback on assessment

Verbal cohort-level feedback for in-module element (class test).

Written individual feedback for post-module element.

[Past exam papers for WM160](#)

Availability

Post-requisite modules

If you pass this module, you can take:

- WM260-15 Applied Maths - II

Courses

This module is Core for:

- Year 1 of DWMS-H655 Undergraduate Digital and Technology Solutions (Cyber) (Degree Apprenticeship)
- Year 1 of DWMS-H652 Undergraduate Digital and Technology Solutions (Data Analytics) (Degree Apprenticeship)
- Year 1 of DWMS-H653 Undergraduate Digital and Technology Solutions (Network Engineering) (Degree Apprenticeship)

- Year 1 of DWMS-H654 Undergraduate Digital and Technology Solutions (Software Engineering) (Degree Apprenticeship)