CS2D4-15 Mathematics for Computer Science 2 (DA)

23/24

Department
> Computer Science

Level
> Undergraduate Level 2

Module leader
> Torsten Mutze

Credit value
> 15

Module duration
> 5 weeks

Assessment
> 60% coursework, 40% exam

Study location
> University of Warwick main campus, Coventry

Description

Introductory description

You cannot register for this module unless you are enrolled on the BSc Computer Science and Technology Solutions Degree Apprenticeship. It is not possible to request this module as an unusual option. If you are studying at Warwick as a visiting student from overseas it is not possible to register for this module.

Students will learn about the basics of linear algebra and matrices, topics in continuous mathematics, and further probability, and become familiar with some of the fundamental theorems in these areas. Eventually, they will apply their knowledge of these areas to solve relevant problems.

Module aims

This module consolidates and builds on mathematical knowledge from earlier modules. It provides a foundation for the more advanced topics of study in the degree and ensures that students have suitable preparation for level 6 modules.

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.

This module will cover:

- A review of previous topics (e.g. number systems, introductory algebra, basic probability)
- Linear algebra and matrices
- Topics in continuous mathematics
- Further topics in probability

Learning outcomes

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

- Understand and apply basic concepts of matrices and linear algebra (e.g. vectors, linear independence, subspaces, bases, matrix algebra, solutions of linear equations).
- Understand and apply basic concepts of sequences and series (e.g. limits and convergence).
- Understand and apply basic concepts of differential and integral calculus (e.g. limits, continuity, differentiable functions, differentiation on inverse functions, integration, logarithms, exponentials, Taylor's Theorem).
- Understand and apply basic concepts of algebraic structure (e.g. groups, rings, fields, vector spaces).
- Understand and apply selected topics in probability.

Indicative reading list

Jeffrey, A., "Mathematics for Engineers and Scientists (6/e)", Chapman and Hall (2005)
Stephenson, G., "Mathematical Methods for Science Students (2/e)", Longman Scientific and Technical (1973)

Subject specific skills

- Use a range of analytical techniques such as data mining, time series forecasting and modelling techniques to identify and predict trends and patterns in data

Transferable skills

- Have demonstrated that they have mastered basic business disciplines, ethics and courtesies, demonstrating timeliness and focus when faced with distractions and the ability to complete tasks to a deadline with high quality.
- Flexible attitude
- Ability to perform under pressure
- A thorough approach to work
- Logical thinking and creative approach to problem solving

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (10%)
Seminars	9 sessions of 2 hours 30 minutes (15%)
Tutorials	14 sessions of 1 hour (9%)
Other activity	98 hours 30 minutes (65%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Other activity description

Self study

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group C

	Weighting	Study time
Problem Sheet 1	30%	
Problem Sheet 2	30%	
Locally Timetabled Examination	40%	

Feedback on assessment

Written

[Past exam papers for CS2D4](#)

Availability

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