# CS2D4-15 Mathematics for Computer Science 2 (DA)

## 24/25

**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

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# 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

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# 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.

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# Assessment

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

### Assessment group C

| | Weighting | Study time | Eligible for self-certification |
|---|---|---|---|
| Problem Sheet 1 | 30% | | No |
| Problem Sheet 2 | 30% | | No |
| Locally Timetabled Examination | 40% | | No |

### 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.