

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

**22/23**

**Department**

Computer Science

**Level**

Undergraduate Level 2

**Module leader**

Andrew Hague

**Credit value**

15

**Module duration**

5 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

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**

<b>Type</b>	<b>Required</b>
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 D**

	<b>Weighting</b>	<b>Study time</b>
Mathematics for Computer Science 2	70%	
Tests linked to online learning resources	30%	

### **Feedback on assessment**

Written

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### **Availability**

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