CS146-10 Discrete Mathematics and its Applications 1

22/23

Department
Computer Science
Level
Undergraduate Level 1
Module leader
Charilaos Efthymiou
Credit value
10
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The module will introduce central concepts in the area of discrete mathematics.

Module aims

The focus of the module is on basic mathematical concepts in discrete mathematics and on applications of discrete mathematics in algortihms and data structures. To show students how discrete mathematics can be used in modern computer science (with the focus on algorithmic applications).

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.

Foundations: logic, sets, relations, functions.
The concept of algorithms and algorithmic thinking in problem solving
Summation techniques: manipulations of sums and multiple sums; finite calculus

Asymptotics and the big-Oh notation
Manipulations with the floor and ceiling functions

Learning outcomes

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

- - Understand the role of formal definitions, formal and informal mathematical proofs, and underlying algorithmic thinking, and be able to apply them in problem solving.
- - Understand the role of discrete mathematics in applications in computer science.
- - Understand the fundamental concepts of discrete mathematics.

Indicative reading list

Please see Talis Aspire link for most up to date list.

Subject specific skills

Acquiring basic knowledge in the new area (of discrete mathematics), including learning the key concepts of mathematical rigour and of the formal proof.

Transferable skills

Critical thinking and creativity

Study

Study time

Type	Required
Lectures	30 sessions of 1 hour (30%)
Seminars	9 sessions of 1 hour (9%)
Private study	61 hours (61%)
Total	100 hours

Private study description

Inclusive of private study, completion of problem sheets and revision.

Costs

No further costs have been identified for this module.

Assessment

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

Students can register for this module without taking any assessment.

Assessment group D

	Weighting	Study time
Five assigned Problem Sheets	20%	
Each problem sheet is marked out of 10 and the overall coursework mark will be calculated as the average of the five marked assignments.		
In-person Examination CS146 Examinations (Summer)	80%	

- Answerbook Pink (12 page)

Assessment group R

	Weighting	Study time
In-person Examination - Resit CS146 Resit Examination (September)	100%	

- Answerbook Pink (12 page)

Feedback on assessment

feedback on problem sets in seminars.

Past exam papers for CS146

Availability

Anti-requisite modules

If you take this module, you cannot also take:

- CS130-15 Mathematics for Computer Scientists 1

- CS131-15 Mathematics for Computer Scientists 2

Courses

This module is Core for:

- UCSA-G4G1 Undergraduate Discrete Mathematics
    - Year 1 of G4G1 Discrete Mathematics
    - Year 1 of G4G1 Discrete Mathematics
- Year 1 of UCSA-G4G3 Undergraduate Discrete Mathematics