CO1012 Discrete Structures

Credits: 10  Convenor: Prof R M Thomas  Semester: 1st

Prerequisites: Essential: GCSE Mathematics (or equivalent)
Assessment: Coursework: 100%

Lectures: 18 hours  Problem Classes: 6 hours
Surgeries: 14 hours  Class Tests: 6 hours
Problems: 6 hours  Private Study: 31 hours

Subject Knowledge

Aims This module introduces some basic concepts from discrete mathematics that are essential in the study of Computing or Computer Science.

Learning Outcomes Students will be able to:

- translate basic logical propositions to and from English;
- understand basic set notation and solve simple problems concerning sets;
- define relations, specify the matrix representation of a graph or a relation, and perform basic operations on matrices;
- solve simple problems on functions, including problems concerning partiality and composition;
- solve simple problems involving exponentials and logarithms, factorials, combinatorics and order notation.

Methods Class sessions together with course notes, surgeries, worksheets, problem classes.
Assessment Five class tests.

Skills

Aims To teach students scientific writing and problem solving skills.

Learning Outcomes Students will be able to:

- understand statements expressed in formal notation;
- solve abstract and concrete problems (both routine seen and simple unseen);
- write neat presentations of mathematical problems and their solutions;
- apply problem solving skills.

Methods Class sessions together with course notes, surgeries, worksheets, problem classes.
Assessment Five class tests.

Explanation of Prerequisites There is no prerequisite knowledge required for this module apart from some topics from GCSE Mathematics.
**Course Description**

The main purpose of this course is to teach the basic concepts from discrete mathematics that are needed in the study of computer science. While the main purpose is to learn the necessary mathematics, the course is taught from a computer science viewpoint throughout. We do not assume any prior knowledge of mathematics other than some basic concepts from GCSE Mathematics (or equivalent).

There will be problem classes (for going through the assessed work) and a surgery session each week (to enable students to attempt questions and overcome any difficulties they are having with the material).

**Detailed Syllabus**

7. Elementary probability. Big O notation: concept and basic properties.

**Reading List**


**Resources**  
Textbook, web page, study guide, surgery questions, class tests; lecture rooms with whiteboards and data projector, surgery room with assistants.

**Module Evaluation**  
Course questionnaires, course review.