



MATH43021 - 2012/2013

General Information

- Title: Set Theory
- Unit code: MATH43021
- Credits: 15
- Prerequisites: Algebraic structures I
- Co-requisite units: None.
- School responsible: Mathematics
- Members of staff responsible: Dr. H. Simmons

Specification

Aims

To introduce students to set theory and its role in mathematics.

Brief Description of the unit

Set theory began to develop in the late 19th century, and now is important in several areas of mathematics. This is a first course on the ideas developed since then. Although Axiomatic Set Theory is mentioned in the course, the material is developed informally, not from a set of axioms.

Learning Outcomes

On successful completion of the course unit students will be able to demonstrate facility with the notions of elementary set theory.

Future topics requiring this course unit

None.

Syllabus

1. Basic material [4]
2. The cardinal comparison of sets [4]
3. The rationals and reals as linearly ordered sets [4]
4. Introduction to order types and ordinals [4]
5. The Axiom of Choice [3]
6. Zorn's lemma and maximizing principles [3]

Textbooks

A full set of notes will be available from

<http://www.cs.man.ac.uk/~hsimmons/SetTheory/settheory.html>

There is no recommended textbook to cover the course. The following are some good books to consult.

- A. G. Hamilton, Numbers, Sets and Axioms, CUP Press (in paperback).
- Y. N. Moschovakis, Notes on Set Theory, Springer-Verlag Undergraduate Texts in Mathematics.
- H. B. Enderton, Elements of Set Theory, Academic Press.

Teaching and learning methods

Three lectures a week plus one weekly office hour. In addition students should expect to do at least seven hours private study each week for this course unit.

Assessment

Coursework: two take home tests; weighting 10% each,
End of semester examination: two and a half hours; weighting 80%

Arrangements