University of Dundee  
Mathematics Division


Organisation

The MA32003 module runs for 11 teaching weeks in the first semester, and is worth 20 SCQF credits (equal to 10 ECTS points).
All organisation and teaching will be carried out by

Dr Raluca Eftimie
Mathematics Division
Room G10,
Fulton Building
Tel: 01382 384488
email: reftimie@maths.dundee.ac.uk

You should make an appointment to see Dr. Eftimie if you have a problem regarding the course. You may also bring matters of concern about the course to the attention of the Mathematics Division Staff/Student Committee, which meets once each semester. A volunteer from Level 3/4 Mathematics will act as class representative to sit on the Staff–Student Committee; their name will be posted on BlackBoard.
This module involves 100 hours of student effort, including 33 contact hours.

Timetable

The weekly timetable for the module consists of three 50 minute classes, typically 2-3 lectures per week and 1 workshop class every 2 weeks.

Pre-requisite

There is no pre-requisite for this course.

Syllabus

Linear Programming (approximately 6 weeks)
Structure of Linear Programming problems, Graphical solutions, Simplex method, Duality, Integer linear programming, Branch and Bound method

Transportation Problems (approximately 3 weeks)
Transportation and Assignment problems, initial basic feasible solution, Hungarian method.

Network Programming (approximately 2 weeks)
Graphs, Minimum cost flow, Max-flow/Min-cut theorem, Ford-Fulkerson method.
Assessment

There will be five in-class tests which together count for 20%. The remaining 80% will come from the degree examination, which will be held in the December diet of Degree Examinations. Honours degree examinations will be two hours in length. The pass mark will be 40% overall.

To pass this module in December, you must also obtain at least 30% in the Degree Examination and at least 30% in the coursework.

If you score less than 40% overall, you will be able to sit an examination in the resit Degree Examination Diet held in July. In this case 100% of the assessment mark is from this examination. The pass mark will be 40%. For the purposes of Honours Classification any pass achieved at the resit diet will be capped at 40%.

If you are unable to attend an element of assessment (such as a Class Test or a Degree Examination because of illness, you must supply a medical certificate covering the relevant period to your School Office.

If illness prevents you from attending other meetings of the class, please keep your School Office informed of the reasons for your absence.

Class Test dates will be posted on MyDundee and announcements made in the class hours.

To pass this module in December it is necessary to gain at least 40% in the overall assessment and obtain at least 30% in the Degree Examination and obtain at least 30% overall in the coursework.

For those who fail the module due to a low exam mark in December there will be a two-hour resit examination paper at the July Examination diet. To pass this module in July it is usually necessary to gain at least 40% in the July Examination.

Your Commitment

You should attend all classes except on medical grounds or with the special permission of the lecturer concerned. If you are unable to attend the degree examination or complete elements of the coursework on time then you should inform the Module Leader and submit a medical certificate. Medical certificates should be submitted to your School Office as soon as possible after the absence.

You must also submit a Mitigating Circumstances form to explain which aspects of assessment have been affected by your absence.

A Medical Certificate will not be taken into account unless a Mitigating Circumstances form that refers to the medical certificate has also been completed.

Approved Calculators

The only types of calculators that have been approved for use in assessments in the School of Engineering, Physics and Mathematics are the Casio FX83 and the Casio FX85.

Study Support

If you are having difficulty with the course you are encouraged to seek help at an early stage by making an appointment to see your lecturer. You may also obtain additional help from the Maths Base (see BlackBoard for details).
**Feedback**

At the end of each section of the module you will be asked to complete a confidential questionnaire regarding the content and presentation of the module. This is an important element in the University’s Academic Standards procedures.

**Recommended Books**

There are many books in the Mathematics Library which cover the material of the course. Some of these are listed here.

- G.B. Dantzig, M.N. Thapa *Linear Programming*  
  New York: Springer  
  Electronic reproduction. Palo Alto, Calif.: Ebrary, 2005

- K. Trustrum *Linear Programming*  
  Routledge and Kegan Paul, 1971

- D.M. Greig *Optimisation*  
  Longman, 1980

- D.G. Luenberger *Linear and Nonlinear Programming*  

- L.A. Wolsey *Integer Programming*  
  Wiley, 1998

- H.P. Williams *Model Building in Mathematical Programming*  
  Wiley, 1978

- W. L. Winston *Operations Research*  
  Duxbury Press, 1994