

School of Mathematics

MA3468 — Numerical linear algebra

2011-12

(JS & SS Mathematics
SS TSM Mathematics)

Lecturer: Dr. C. Ó Dúnlain

Requirements/prerequisites:

Duration: 11 weeks

Number of lectures per week: 3 including tutorials

Assessment: 10% coursework and 90% exam.

ECTS credits: 5

End-of-year Examination: This module will be examined jointly with MA3467 in a 3-hour examination in Trinity term, except that those taking just one of the two modules will have a 2 hour examination. However there will be separate results for MA3468 and MA3467.

Description:

Please note that this is a rough outline of the topics planned, which will become more well-defined closer to the start of the module.

- Strassen's fast matrix multiplication method. Webb Miller's analysis of accuracy and speed. (Interesting: apparently Strassen's algorithm is fast but unstable).
- IEEE standard.
- Gaussian elimination without pivoting, exhibiting potential inaccuracy.
- LU matrix decomposition.
- SVD matrix decomposition.
- Algorithms to diagonalise matrices (eigenvalues)
- Dantzig's simplex method for Linear Programming
- Karmakar's interior search method for same

August 8, 2011