School of Mathematics

Module MA2223 — Metric spaces 2010-11
(SF Mathematics, SF Two-subject Moderatorship )

Lecturer: Dr. Derek Kitson

Requirements/prerequisites: prerequisite: 121

Duration: Michaelmas term, 11 weeks

Number of lectures per week: 3 hours per week including lectures and tutorials

Assessment: Assignments will be worth 10% of the final mark.

ECTS credits: 5

End-of-year Examination: This module will be examined jointly with MA2224 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 MA2223 and MA2224.

Description:

- Metric spaces (including open and closed sets, continuous maps and complete metric spaces)
- Normed vector spaces (including operator norms and norms on finite dimensional vector spaces)
- Topological properties of metric spaces (including Hausdorff, connected and compact spaces)

See also [http://www.maths.tcd.ie/~dk/MA2223.html](http://www.maths.tcd.ie/~dk/MA2223.html)

Recommended Reading:


Learning Outcomes: On successful completion of this module, students will be able to:
• accurately recall definitions, state theorems and produce proofs on topics in metric spaces, normed vector spaces and topological spaces.

• construct rigorous mathematical arguments using appropriate concepts and terminology from the module, including open, closed and bounded sets, convergence, continuity, norm equivalence, operator norms, completeness, compactness and connectedness.

• solve problems by identifying and interpreting appropriate concepts and results from the module in specific examples involving metric, topological and/or normed vector spaces.

• construct examples and counterexamples related to concepts from the module which illustrate the validity of some prescribed combination of properties.

January 19, 2011