School of Mathematics

Module MA342A — Harmonic Analysis I 2009-10
(JS & SS Mathematics, JS & SS Two-subject Moderatorship)

Lecturer: Prof. John McCarthy

Requirements/prerequisites: prerequisite: 221

Duration: Hilary term, 10 weeks

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

Assessment:

End-of-year Examination: This module will be examined jointly with MA342B in a 3-hour examination in Trinity term, except that those taking just one of the two modules will have a 2 hour examination.

Description: Harmonic Analysis is one of the most successful and beautiful areas of mathematics. From its origins in Fourier series, it has expanded in various ways - singular integral operators, complex analysis, group representation theory, operator theory.
Topics:
　　Fourier Series: Origins. Convergence of Cesaro means. Mean-square convergence.
　　Pointwise convergence (for smooth classes). Failure of pointwise convergence.
　　Weyl's equidistribution theorem.
　　Fourier Transform: Definition, inversion, Plancherel formula.

February 26, 2010