School of Mathematics

Module MA342B — Harmonic Analysis II   2009-10
(JS & SS Mathematics, JS & SS Two-subject Moderatorship)

Lecturer: Prof. John McCarthy

Requirements/prerequisites: prerequisite: MA342A

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 MA342A 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 Transform: Poisson summation. Heisenberg uncertainty principle
    Fourier Transform in several variables. Radon Transform.
    Fourier analysis on finite abelian groups. Fast Fourier transform. Characters.
    Dirichlet's theorem that there are infinitely many primes in arithmetic progressions.

February 26, 2010