School of Mathematics

Course 321 — Modern Analysis   2002-03
(Optional JS & SS Mathematics, SS Two-subject Moderatorship)

Lecturer: Dr. D. P. O'Donovan

Requirements/prerequisites: 211/221

Duration: 21 weeks

Number of lectures per week: 3

Assessment: Regular assignments.

End-of-year Examination: One 3-hour examination

Description:

Measure theory Measurable sets and functions, definitions and properties of the integral. Convergence theorems. Carathéodory extension theorem. Sigma measures, decompositions and the Radon-Nikodym theorem. Fubini theorem.

Banach Spaces Bounded linear maps, finite dimensional spaces, quotient spaces, Hahn-Banach theorem, dual spaces, Riesz representation theorem, Stone-Weierstrass theorem, open mapping theorem, closed graph theorem.

Hilbert spaces Orthonormal bases, orthogonal projection, self-adjoint and normal operators.

April 9, 2003