School of Mathematics

Module MA2332 — Equations of mathematical physics II 2010-11
(SF Mathematics, SF Theoretical Physics, JS & SS Two-subject Moderatorship)

Lecturer: Dr. Sinéad Ryan

Requirements/prerequisites: prerequisite: MA2331

Duration: Hilary term, 11 weeks

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

Assessment:

ECTS credits: 5

End-of-year Examination: This module will be examined jointly with MA2331 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: (Preliminary.) Sturm-Liouville theory; Partial Differential Equations; Boundary value problems; Harmonic functions; Separation of variables in cartesian and other coordinates.

Approximately the second half of previous module 231. Refer to http://www.maths.tcd.ie/pub/official/Courses08-09/231.html

Objectives:
Introduction to basic techniques of applied mathematics, with applications.

Learning Outcomes: On sucessful completion of this module, students will be able to:

- state and prove the Green’s, Stokes’ and Gauss’ integral theorems;
- solve homogeneous and non-homogeneous first and second order ordinary differential equations with constant coefficients;
- determine series solutions (including Frobenius method) of first and second order ordinary differential equations with non-constant coefficients;
- apply separation of variables to solve partial differential equations;
- apply their knowledge in mathematical and physical domains where relevant.

September 12, 2011