School of Mathematics

Course 431 1999-2000

(Optional JS & SS Mathematics, JS & SS Theoretical Physics, SS Two-subject Moderatorship)

Lecturer: Professor L.J. Crane

Requirements/prerequisites: 131, 231

Duration: 21 weeks.

Number of lectures per week: 3

Assessment:

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

Description: The topics dealt with in this course are:

(a) derivation of the Navier-Stokes equations: exact solutions of the Navier Stokes equations, Stokes flows, lubrication theory, irrotational inviscid flows, aerofoil theory;

(b) Applications of fluid mechanics in meteorology. (3 lectures)

(c) derivation of the boundary layer equations: exact solutions, approximate methods of solution, separation of the boundary layer.

Objectives: This is a course in the mechanics of Newtonian fluids.

May 6, 1999