School of Mathematics

MA1E01 — Engineering Mathematics I 2011-12
(JF Engineers, MSISS. MEMS )

Lecturer: Prof. P. Taylor

Requirements/prerequisites:

Duration:

Number of lectures per week: Michaelmas Term, 12 weeks

Assessment:

ECTS credits: 5

End-of-year Examination:

Description:

Textbooks:

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

- Determine whether a particular map or a particular graph represents a function, take sums, differences, products, quotients and compositions of functions and find their domains and ranges.

- Compute limits of various functions by applying the laws of limits or the Squeezing Theorem and prove certain limits rigorously by applying the “epsilon-delta” formalism.

- Determine whether functions are continuous or differentiable at particular values or on particular intervals.

- Apply the various techniques of differentiation such as the product, quotient and chain rule as well as implicit differentiation.

- Solve a variety of problems involving the derivative function including finding the equation of a tangent line to a curve, related rates problems, local linear approximations, maximum and minimum problems, approximating roots and sketching curves.

- Approximate the area under a curve by Riemann sums and compute exactly the area by using the anti-derivative.

- Solve a variety of problems involving integration such as solving simple ODEs, area problems and problems involving particles in rectilinear motion.

November 10, 2011