Module Title **Advanced Quantitative Methods for Engineers** **Keywords** Partial Differentiation, Laplace Transforms, Fourier Series	Reference CM2900 SCQF Level SCQF 8 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved June 2002 Amended April 2005 Version No. 2

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

Mathematics 1B (CM1902) or equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To provide the student with the ability to apply advanced level mathematics to engineering problems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

Laplace Transforms: Definition of Laplace transform and its inverse. Use of tables to calculate Laplace transforms of elementary function. The solution of ordinary differential equations. The step function and impulse function.

Fourier series: Decomposition of waveforms. Fourier series of simple functions.

Indicative Student Workload

Contact Hours	Full Time
Lectures	24
Tutorials	24
Computer Labs	10
Assessment	6
Directed Study	
Directed Study	30
Private Study	
Private Study	56

1. Apply partial differentiation techniques to problems in engineering.
2. Apply Laplace transform methods to problems involving simple linear systems.
3. Apply Fourier series techniques to periodic signals.
4. Use a computer mathematics package to carry out the operations, as appropraite in 1 - 3 above.

Indicative Module Content

The syllabus will include:

Further applications of a computer mathematics package to problems in engineering mathematics.

Partial differentiation: Application to simple engineering problems.

Mode of Delivery

The course is lecture, tutorial and computer lab based.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3
Component 2	1,2,3,4

Component 2 - Coursework

Component 1 - Exam

Indicative Bibliography

1. STROUD, K.A., 2013. Engineering Mathematics. 7th Ed. Palgrave.