

MODULE DESCRIPTOR

Module Title

Mathematical Techniques

| | | | |
|-----------|-----------|-------------|--------|
| Reference | EN2900 | Version | 7 |
| Created | June 2022 | SCQF Level | SCQF 8 |
| Approved | June 2002 | SCQF Points | 15 |
| Amended | June 2022 | ECTS Points | 7.5 |

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:

- 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.

Indicative Module Content

The syllabus will include: Partial differentiation: Application to simple engineering problems. 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.

Module Delivery

This module is delivered by a combination of lectures and tutorials online. It will be supported by drop-in evening sessions and labs on campus. Assessments will primarily be online although exams will be held on campus with the full-time cohorts.

Indicative Student Workload

| | Full Time | Part Time |
|--|-----------|-----------|
| Contact Hours | N/A | 48 |
| Non-Contact Hours | N/A | 102 |
| Placement/Work-Based Learning Experience [Notional] Hours | N/A | N/A |
| TOTAL | N/A | 150 |
| <i>Actual Placement hours for professional, statutory or regulatory body</i> | | |

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type: Examination Weighting: 100% Outcomes Assessed: 1, 2, 3
 Description: Closed book examination.

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Component 1 comprises 100% of the module grade. A minimum of Grade D is required to pass the module.

| Module Grade | Minimum Requirements to achieve Module Grade: |
|--------------|--|
| A | A |
| B | B |
| C | C |
| D | D |
| E | E |
| F | F |
| NS | Non-submission of work by published deadline or non-attendance for examination |

Module Requirements

Prerequisites for Module Mathematics 1 (EN1902) or equivalent.
 Corequisites for module None.
 Precluded Modules None.

INDICATIVE BIBLIOGRAPHY

- 1 STROUD, K.A. AND BOOTH, D.J., 2020. Engineering Mathematics. 8th Ed.
- 2 STROUD, K.A. AND BOOTH, D.J., 2020. Advanced Engineering Mathematics. 6th Ed.
- 3 KREYSZIG, A., 2011. Advanced Engineering Mathematics, 10th Ed. Wiley