# Department of Electronics Module Specification

## Module title
MathsII ELE00004F

## Credit value
40

## Module credit level
Level 3

## Module coordinator and department involved in delivery of the module
Dr Janet Clegg
Other Electronics Teaching Staff – Dr Alice Courvoisier, Dr Hirohata, Dr Gajaweera

## Indicative JACS subject code for the module
H600 (Electronic Engineering)

## Teaching cycle
Stage 0, Spring and Summer Terms. Taught annually.

## Pre-requisite modules/co-requisite modules/prohibited combinations
Maths I

## Shared teaching
BSc Music Technology Stage 1 module: *Mathematics for Music Technology*

## Breakdown of the module workload

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>54</td>
</tr>
<tr>
<td>Practical</td>
<td>108</td>
</tr>
<tr>
<td>Workshops</td>
<td>36</td>
</tr>
<tr>
<td>Assessment</td>
<td>24.5</td>
</tr>
<tr>
<td>Private Study</td>
<td>177.5</td>
</tr>
</tbody>
</table>

## Module aim
The module aims to develop students’ knowledge and facility in mathematics for engineering.
# Module learning outcomes

On completion of this module students are expected to have knowledge of mathematics to a level appropriate for first year electronics degree programmes.

# Further information about the module content

## Spring Term

**Logs and Exponentials**

*Introduction to Calculus* – basic polynomial differentiation.

**Surds** – manipulation, simplification, and rationalisation of denominators.

**Matrices** – addition, subtraction, multiplication, $2 	imes 2$ inverses and determinants, solution of matrix equations, solution of simultaneous equations, and application to geometry.

**Series** – sigma notation, arithmetic and geometric progressions, and the binomial series.

**Geometry** – tangent to a curve.

**Differentiation** – products, quotients, functions of functions, exponentials, logarithmic functions, turning points, trigonometric functions.

**Complex Numbers** – Cartesian form and Argand diagrams, addition, multiplication, division, modulus, and solution of quadratic equations.

**Vectors** – addition and subtraction, scalar (dot) product and angles between vectors; position, displacement, velocity and acceleration vectors, and work.

## Summer Term

**Trigonometric Identities** – basic identities, double and half angle formulae, addition and multiplication formulae; angles outside $\pi$.

**Integration** – introduction, trigonometric functions, constants of integration, substitution, partial fractions, by parts, indefinite/definite integrals.

**Series** – sigma notation for sums of, Maclaurin expansions for.

**Complex Numbers** – modulus-argument form, exponential form, Euler’s identity, and solution of.

**Probability and Statistics** – mean, mode, median, percentiles, standard deviation; combined probabilities and independent events.

**Differential Equations** – simple first order

# Assessment

<table>
<thead>
<tr>
<th>Continuous Assessment</th>
<th>Examination</th>
<th>Reassessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please refer to the Statement of Assessment and the Assessment and Feedback Summary</td>
<td>Please refer to the Statement of Assessment</td>
<td></td>
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<tr>
<td>Please refer to the Statement of Assessment</td>
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</tbody>
</table>

# Feedback to students

Students will receive written feedback on their coursework within 3 weeks of submission.
## Reading List

### Key to recommended books:

<table>
<thead>
<tr>
<th>**</th>
<th>Strongly recommended for purchase (available from the University bookshop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Recommended purchase</td>
</tr>
<tr>
<td>++</td>
<td>Essential library reading</td>
</tr>
<tr>
<td>+</td>
<td>Supportive library reading</td>
</tr>
</tbody>
</table>


| Date on which the module template was last updated | 19th July 2010 |
| Date approved by BoS(s)                             | 3rd March 2010 |