

Module Title:	Mathematics and Computer Applications 1
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	3 programme(s)
Teaching & Learning Strategies:	This module will be delivered using a mixture of lectures and tutorials. The Institute Managed Learning Environment will be used to interactively communicate with students e.g. tutorial sheets, on-line tests, discussion forums, reference information.
Module Aim:	To give the students the knowledge, competencies and skills necessary to support the mathematical procedures encountered in the other modules of this programme.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Apply fundamental algebra theory to solve different types of problems, equations and formulae.
LO2	Produce and interpret graphs; analyse various mathematical functions.
LO3	Practice trigonometric functions and graphs and employ trigonometric ratios in various engineering contexts
LO4	Express and solve mathematical problems using a numerical computation environment
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

Module Content & Assessment
Indicative Content
Basic Algebra

• Apply rules of precedence in calculation • Use calculator • Apply rules of indices • Convert units and use prefixes • Add, subtract, multiply fractions and algebraic expressions • Factorise algebraic expressions • Solve simple equations, simultaneous and quadratic equations • Transpose formulae • Use log laws and solve log and exponential equations • Form Partial Fractions

Graphs and Functions

• Plot and note properties of straight line, quadratic, log, exponential and sinusoidal graphs • Prove laws using linear graphs • Use and apply graphs in engineering applications.

Trigonometry and Waveforms

• Solve right-angled triangles using Pythagoras' theorem, trigonometric ratios, inverse trigonometric functions • Use the sine and cosine rules in the solution of non-right angled triangles • Use degree and radian measure • Sketch graphs of waves including amplitude, period, frequency, phase angle • Waves in electrical/electronic applications

Numerical Computation

Express and solve mathematical and engineering problems in a computational environment. Plot and analyse graphs.

Assessment Breakdown	%
Continuous Assessment	20.00%
Practical	40.00%
End of Module Formal Examination	40.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	A range of continuous assessments will be carried out throughout the term	1,2,3	20.00	n/a

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A range of laboratory exercises and assessments will be carried out throughout the term	1,2,3,4	40.00	n/a

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A final exam will be carried out at the end of term	1,2,3	40.00	End-of-Semester

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	A range of continuous assessments will be carried out throughout the term	1,2,3	20.00	n/a

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A range of laboratory exercises and assessments will be carried out throughout the term	1,2,3,4	40.00	n/a

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A final exam will be carried out at the end of term	1,2,3	40.00	End-of-Semester

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	3.00
Laboratory	Every Week	2.00
Independent Learning	Every Week	4.00
Total Hours		9.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	<u>Bachelor of Engineering (Honours) in Biomedical Electronics</u>	1	Mandatory
CW_EESYS_B	<u>Bachelor of Engineering (Honours) in Electronic Engineering</u>	1	Mandatory
CW_EEBEE_D	<u>Bachelor of Engineering in Biomedical Electronics</u>	1	Mandatory