Module code	TG-1101			
Module Title	Mathematics for Engineering I			
Degree/Diploma	Bachelor of Engineering			
Type of Module	Degree Core			
Modular Credits	4	**Total student Workload**	10	hours/week
		Contact hours	4	hours/week
Prerequisite	ZZ-1104 Essential Mathematics for Digital Science			
Anti-requisite				

Aims

To understand basic mathematics concepts for their applications in solving engineering problems.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order :	40%	- Understand the basic concepts of trigonometry, logarithmic and exponential functions, differentiation, derivatives, Integrals and integration, emphasizing the link between basic mathematics and Engineering
Middle order :	40%	- Apply problem-solving approaches to learning - Solve engineering mathematics problems of moderate difficulty - Investigate mathematical problems through analysing data - Identify and translate the physical problems into mathematical form
Higher order:	20%	- Evaluate and assess the correct mathematical concepts and procedures for complex engineering mathematics problems - Work independently and in a team - Follow protocols from the lecturer on assigned mathematical problems

Module Contents

- Limits and derivatives of functions of one variable, including the trigonometric, inverse trigonometric, logarithmic, and exponential functions
- Differentiation rules, implicit differentiation, geometric and physical interpretations of the derivative.
- Applications of the derivative include optimization and sketching graphs of one variable function.
- Definite integrals of functions of one variable, antiderivatives, and two versions of the Fundamental Theorem of Calculus.
- Integration techniques include substitution, integration by parts, inverse trigonometric substitutions, and partial fraction decompositions.
- Improper integrals, L'Hopital's Rule, applications to geometry and physics, including calculating areas, volumes, and work done by a variable force.

Assessment	Formative assessment	Tutorial and feedback.
	Summative assessment	Examination: 60%
		Coursework: 40% - 2 class tests (15% each) - 2 assignments (5% each)