

Module code	TG-2101		
Module Title	Mathematics for Engineering II		
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	TG-1101 Mathematics for Engineering I		
Anti-requisite			
Aims			
To equip students with advanced concepts of mathematics and its applications to solve related problems in engineering.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	40%	- understand the basic concepts of partial & directional derivatives, chain rule, matrices, different coordinate systems and their transformations, higher order integration, emphasizing the link between advanced mathematics and Engineering	
Middle order :	40%	- apply problem-solving approaches to learning and solve high-level engineering mathematics problems of advanced difficulty through acquired knowledge - apply the learned mathematical techniques to related engineering problems with some difficulty - identify and translate the physical problems into mathematical form	
Higher order:	20%	- evaluate, assess, and select correct mathematical concepts and procedures for engineering problems related to Fluid Mechanics, Heat Transfer, Thermodynamics, Computer Networks etc. - work independently and in a team	
Module Contents			
<ul style="list-style-type: none"> • Partial derivatives • The gradient and directional derivatives • The chain rule • Matrices, determinants, matrix inversion, systems of linear equations, linear independence of vectors, eigenvalues, and eigenvectors • Polar, cylindrical, and spherical coordinates • Implicit differentiation and implicit function theorem • Local extrema and minima • Surface and line integrals • Double and triple integrals • Change of coordinates formula for double integrals • Fourier, Laplace and z-transformation 			
Assessment	Formative assessment	Tutorial and feedback.	
	Summative assessment	Examination: 60%	
		Coursework: 40%	
		- 2 class tests (15% each) - 2 assignments (5% each)	