

Module code	TG-1307		
Module Title	Engineering Electromagnetics		
Degree/Diploma	Bachelor of Engineering Degree		
Type of Module	Major Option		
Modular Credits	4	Total student workload	8 hours/week
		Contact hours	4 hours/week
Prerequisite	None		
Anti-requisite	SP-1302 Electricity and Magnetism		
Aims			
This module will introduce the principles of electromagnetic theory, and apply these principles to engineering devices and processes. The student will have opportunity to analyse electromagnetic problems, and to understand the physical basis for circuit elements such as capacitors, inductors, transformers, cables and electrical machines.			
Learning Outcomes:			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	30%	<ul style="list-style-type: none"> - describe electromagnetic devices in terms of electromagnetic theory - assess and evaluate the performance of devices such as capacitors, inductors, cables and transformers 	
Middle order :	40%	<ul style="list-style-type: none"> - solve electromagnetic engineering problems - perform experiments on electromagnetic systems and analyse and interpret the data 	
Higher order:	30%	<ul style="list-style-type: none"> - follow laboratory procedures and carry out instructions - present information and the analysis of data in written communications 	
Module Contents			
<ul style="list-style-type: none"> - Coulomb forces and electric field intensity - Gauss' law and electric flux - Electric potential and field - Calculations of capacitance, boundary conditions - Dielectrics and polarization, energy storage - Ampere's law and magnetic flux, magnetic materials: ferromagnetism and B-H curves - Calculation of inductance, boundary conditions - Calculation of magnetic field in two media - Simple magnetic circuits and energy storage - Faraday's law, self and mutual inductances, basic transformers, basic motors 			
Assessment	Formative assessment	Online multiple choice questions will be used to test and give feedback on their learning	
	Summative assessment	Examination: 50% Coursework: 50% <ul style="list-style-type: none"> - 2 class tests (10% each) - 2 laboratory reports (15% each) 	