Module Code	TG-2306		
Module Title	Fundamentals of Materials Science and Engineering		
Degree/Diploma	Bachelor of Engineering		
Type of Module	Major Option		
Modular Credits	2	**Total student Workload**	4 hours/week
		Contact hours	2 hours/week
Prerequisite	None		
Anti-requisite	SP-2307 Introduction to Material Science		

Aims

This module aims to provide students with fundamental understanding of materials science and engineering including knowledge about material properties and how they affect their selection in real world applications. Analyses of the material's properties will be used in the design of engineering systems.

Learning Outcomes

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

Lower order :	30%	- comprehend the basic principles of materials science and engineering
		- recall the structure of metals and ceramics
		- describe the synthesis of target materials
		- recognise electrical and mechanical properties of materials
Middle order:	60%	- explain the results of analyses and make an appropriate report for an effective properties of materials
		- analyse and relate the nature of failure mechanisms and phase transformations in materials
Higher order:	10%	- apply their knowledge to calculate electrical and mechanical properties for applications

Module Contents

− Atomic structure of materials

− Structures of metals and solids

− Structural characterization techniques

− Imperfections in solids and diffusion mechanisms

− Failure mechanisms and phase transformations

− Synthesis techniques and processing of materials

− Mechanical and electrical properties of materials

Assessment	Formative assessment	Monthly online multiple choice questions will be used to test and to give feedback for their learning
	Summative assessment	Examination: 60%
		Coursework: 40% - 2 class tests (15% each) - 1 individual assignment (10%)