

<b>Module code</b>	SP-4307		
<b>Module Title</b>	Energy Generation, Storage and Distribution		
<b>Degree/Diploma</b>	Bachelor of Science (Applied Physics)		
<b>Type of Module</b>	Major Option		
<b>Modular Credits</b>	4	<b>Total student Workload</b>	10 hours/week
		<b>Contact hours</b>	4 hours/week
<b>Prerequisite</b>	None		
<b>Anti-requisite</b>	TE-3304 Electromechanical, Energy Conversion and Control		
<b>Aims</b>			
This module aims to provide the students an overview of the fundamental concepts in the energy generation process along with an understanding on various components of energy-generation, storage and distribution systems.			
<b>Learning Outcomes</b>			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	30%	- understand the basic principles of energy generation and distribution systems like generators, transmission systems and distribution networks.	
Middle order :	60%	- analyse various components in the power systems using the existing theories and models.	
Higher order:	10%	- Extend and employ the existing models for new applications - work independently in simulating the power system dynamics	
<b>Module Contents</b>			
<ul style="list-style-type: none"> <li>- Electric Utility Industry Structure, Basics of Electric Circuits, Phasors, Complex Power,</li> <li>- Network Equations, Power Factor Correction, Single and 3-Phase Systems, Power Transformers, The Per-Unit System, Autotransformers,</li> <li>- Methods of Grid Energy Storage (such as Batteries, Compressed air, Flywheel, Hydrogen etc.),</li> <li>- Transmission Line Parameters, Transmission Line Steady State Operation, Power Flow Analysis, Symmetrical Faults, Power System Protection,</li> <li>- Transient Stability, Power System Control, and Power Distribution Methodology</li> </ul>			
<b>Assessment</b>	Formative assessment	Solving practical problems, discussions and feedback	
	Summative assessment	Examination: 60% Coursework: 40% - 2 class tests (20%) - 2 reports (20%)	