

SEMESTER	DEPARTMENT	COURSE TITLE
<i>Seventh</i>	<i>Power Engineering</i>	<i>Power Systems Utilization</i>
COURSE CODE	HOURS: 3	COURSE SPECIFICATIONS
<i>EP707</i>	UNITS: 3	<i>Theoretical Content</i>
<p>1. Describe the Types, Sketch the Characteristics of Mechanical Loads and Breaks.</p> <ul style="list-style-type: none"> ➤ Describe the operation, advantages and disadvantages of mechanical loads. ➤ Identify the torque/speed characteristics of each type. 		
<p>2. Specify the Requirements for Selection of Motor Drives.</p> <ul style="list-style-type: none"> ➤ Define electric drives and its applications. ➤ Define the stability of drive operation. ➤ Identify how drives are chosen and the options for an adjustable speed drive. 		
<p>3. Describe the Utilization of Electromechanical and Static Converter DC Motor Controls.</p> <ul style="list-style-type: none"> ➤ Define and sketch the Ward-Leonard method to control the speed of DC motor. ➤ Describe the field control of DC motors. ➤ Describe with schematics the control of DC motor using DC choppers (speed control and braking). ➤ Describe with schematics and state the feature of control of DC motor using three phase dual converter for 4-Quadrant operation. 		
<p>4. Describe the Utilization of Electromechanical and Static Converter AC Motor Controls.</p> <ul style="list-style-type: none"> ➤ Describe with illustrative diagrams and state the main features of the speed control of three phase induction motors by AC voltage control, invertors, slip power recovery and PWM invertors. 		
<p>5. Define the Utilization of Standby Power Supplies.</p> <ul style="list-style-type: none"> ➤ Describe standby power supply with power-generating plants (operating conditions, installation site, surge loading, switch gear and control gear). ➤ Define the principle of uninterrupted power supply with standby rotary UPS plant. 		

- Define the principle and function of uninterrupted power supply with static UPS systems.

References:

1. *Electric Motors and Drives*, Austin Hughes, Newnes 1990.
2. *Power Electronics and Motor Control*, W. Shephard, L.N. Hulley and D. Liang, Cambridge Univ. Press 1995.
3. *Power Electronics: Circuits, Devices and Applications*, M. H. Rashid, Prentice-Hall 1994.