

<b>SEMESTER</b> <i>Sixth</i>	<b>DEPARTMENT</b> <i>Control Engineering</i>	<b>COURSE TITLE</b> <i>AC Machines Lab</i>
<b>COURSE CODE</b> <i>EP602</i>	<b>HOURS: 3</b> <b>UNITS: 1</b>	<b>COURSE SPECIFICATIONS</b> <i>Practical Content</i>
<b>1. Knows the Construction and Operation of 3-Phase Squirrel-Cage and Slip-Ring Motors.</b> <ul style="list-style-type: none"> <li>➤ To be familiar with the safety rules in lab.</li> <li>➤ To be able to strip-down a three-phase motor</li> <li>➤ Identify its components, inspect and clean.</li> <li>➤ Assemble the 3-phase motor.</li> </ul>		
<b>2. Examining the Relationship between Torque and Speed.</b> <ul style="list-style-type: none"> <li>➤ Rewind stator windings of induction motor.</li> <li>➤ Rewind 3- phase motor squirrel cage.</li> <li>➤ Rewind a 3-phase slip motor.</li> </ul>		
<b>3. Conduct Tests to Determine the Equivalent Circuit Constants and Efficiency.</b> <ul style="list-style-type: none"> <li>➤ 3-ph induction motor no load and blocked rotor tests.</li> <li>➤ The load test (torque / speed, efficiency / load current, power factor / load current).</li> </ul>		
<b>4. Conduct tests of different methods of starting 3-phase motors.</b> <ul style="list-style-type: none"> <li>➤ Apply the starting method by using external resistors with the rotor and</li> <li>➤ Apply starting for a 3-phase induction motor by star-delta method.</li> <li>➤ Starting of 3-phase induction motor by autotransformer method.</li> </ul>		
<b>5. Understands the Construction of Operation for Synchronous Generators. Ability to Control the Generated Voltage and Frequency. Understanding the Parallel Operation.</b> <ul style="list-style-type: none"> <li>➤ Strip down, clean and assemble a synchronous generator.</li> <li>➤ Carry out Synchronous generator load test.</li> <li>➤ Parallel operation of synchronous generator to infinite bus.</li> </ul>		
<b>6. Understands the Construction and Theory of Operation of Single-Phase Induction Motors and Stepper Motors.</b> <ul style="list-style-type: none"> <li>➤ Strip-down and collect a single-phase induction motor.</li> </ul>		

- Be familiar with internal construction parts of them.
- Be able to define types of single phase induction motors.
- Apply different starting methods for starting single-phase motors.
- Be able to strip-down and assemble a stepper motors.

***References:***

1- *Elements of power system*, by W. Stevenson.

2- *Power System Analysis*, John Grainger and William D. Stevenson JR. 1994