SEMESTER	DEPARTMENT	COURSE TITLE
Fifth	*Power Engineering*	*DC Machines Lab*
COURSE CODE	**HOURS:** 3	**COURSE SPECIFICATIONS**
EP503	**UNITS:** 1	*Practical Content*

1. ***Understands the Main Parts of a DC Machine & to Know the Shape and Function of Each of the Machine Windings.***

- Know the safety measures in laboratory relating to dc machines.
- Dismantle and familiar with the parts of the DC machine (stator – rotor – armature winding – field winding – compensating winding – commutating winding – commutator – brushes)
- Assemble dc motor
- Install and test performance.

2. ***Be Familiar with the DC Generator Characteristics. Defines the Generator Excitation Methods.***

- Determine and draw the open circuit characteristics (magnetization curve), the load characteristics and voltage regulation of the separately excited dc generator.
- Determine and draw the open circuit characteristics, the load characteristics and the voltage regulation of the shunt excited dc generator.
- Determine and draw the load characteristics and voltage regulation of the compound dc generators (cumulative and differential)

3. ***Explains the Operation Principles of a DC Motor; Its Types and Their Applications.***

Measure and verify:

- The torque/current and torque/speed relationships for series, shunt, compound and separately excited motors.
- Carry out the load tests (efficiency curves) for series, shunt, and compound motors.

4. ***Identify input & Output Devices Used in Control Systems, and Identify the Parameters of the Prime-Movers & Transducer.***

Verify:

- Prime-movers: DC motor, Solenoids, Stepper motors.

- Transducers : Position, Velocity, Acceleration (force) .

References:

1. ***Electrical machines for technicians and technician engineers***, Stephan F. Jorek, Longman,1972.
2. ***Electrical machinery, transformers, and control***, Harold W. Gaingrich, Printice Hall ,1979.
3. ***Electric machinery fundamentals***, Stephen J. Chapman, 3rd edition, McGraw-Hill, 1999.
4. ***Principles of electric machinery and power electronics***, P.C. Sen , John Wiley & sons, 1989.