

**Relevant Course:** Electrical Machines

**Relevant Department :** Electrical Engineering

**Relevant Semester:** 3<sup>rd</sup> sem or 4<sup>th</sup> sem

**Pre-requisite:** 1. Magnetic circuits 2. Basics of Transformers 3. Basics of 3-phase circuits 4. Biot-Savart's law and Lenz's law

**Course Description & Outline :**

1. Basic operating principle of 3 phase induction machines.
2. Construction, advantages and disadvantages over other machines, similarities and differences between transformers and induction machines.
3. Different mode of operations: Motoring, generating and plugging regions.
4. Development of equivalent circuit model, determination of eq.ckt parameter using free-running and blocked rotor tests.
5. Torque expression, slip-torque characteristics, expression for  $T_{max}$ ,  $S_{max}$  and influence of various parameters on slip torque curve of the machine
6. Starting methods for 3-phase induction machines
7. Basics of speed control and PF improvement.
8. Basics of braking of induction motors.