1.	Title of the course	Modeling and Control of Electric Machines
2.	Course number	EE4023
3.	Status of the course	Elective
4.	Structure of credits	3-0-0-3
5.	Offered to	UG
6.	New course/modification to	New course
7.	To be offered by	Department of Electrical Engineering
8.	To take effect from	July 2020
9.	Prerequisite	CoT for UG
10.	Whether approved by the Department	Yes
11.	**Course Objective(s):** To introduce the dynamic behavior of AC machines through modeling, analysis and control of a three phase induction motor drive.	
12.	**Course Content:** Principle of unified machine theory, generalized torque equation; Performance evaluation of DC machine and speed control; Three phase induction motor: transformation methods, (stationary, rotor and synchronous frames) and corresponding equivalent circuits; Reduced order dynamic modeling, scalar and vector control (rotor field oriented control, stator field oriented and air gap field oriented control) of induction machine; Simulation and controller design for the different control algorithms.	
13.	**Textbook(s):** 1. Boldea I and Nasar A, *Electric Drives*, 1st Edition, CRC Press (1998). 2. Chapman S J, *Electric Machinery Fundamentals*, 4th Edition, McGraw Hill (2010).	
14.	**Reference(s):** 1. Hussain A and Ashfaq H, *Electric Machines*, 3rd Edition, Dhanpat Rai and Co (2016). 2. Krishnan R, *Electric Motor Drives*, 1st Edition, Prentice Hall (2001).	