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| 1. | Title of the course | Modeling and Control of Electric Machines |
| 2. | Course number | EE405L |
| 3. | Structure of credits | 3-0-0-3 |
| 4. | Offered to | UG |
| 5. | New course/modification to | Modification To EE4023/12 |
| 6. | To be offered by | Department of Electrical Engineering |
| 7. | To take effect from | July 2022 |
| 8. | Prerequisite | CoT for UG |
| 9. | **Course Objective(s):** To introduce the dynamic behavior of AC machines through modeling, analysis and control of a three phase induction motor drive. | |
| 10. | **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. | |
| 11. | **Textbook(s):**<br>1. Boldea I and Nasar A, *Electric Drives*, 1st Edition, CRC Press (1998).<br>2. Chapman S J, *Electric Machinery Fundamentals*, 4th Edition, McGraw Hill (2010). | |
| 12. | **Reference(s):**<br>1. Hussain A and Ashfaq H, *Electric Machines*, 3rd Edition, Dhanpat Rai and Co (2016).<br>2. Krishnan R, *Electric Motor Drives*, 1st Edition, Prentice Hall (2001). | |