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| 1. | Title of the course | Power Electronics |
| 2. | Course number | EE310L |
| 3. | Structure of credits (L-T-P-C) | 3-0-0-3 |
| 4. | New course/modification to | Modified with EE401L/POWER ELECTRONICS |
| 5. | To be offered by | Electrical Engineering |
| 6. | Proposed by | Viju Nair R |
| 7. | Prerequisite | None |
| 8. | Course Objective(s): To explore the basics of power electronic devices and converters. To discuss the working principles, operating modes and analysis of DC-DC, DC-AC, AC-DC and AC-AC converters for a variety of loads. To explain the control of power electronic converters. | |
| 9. | Course Content: Introduction and applications of power electronics, difference between power electronics and low power analog electronics; Characteristics of power semiconductor devices: diode, metal oxide semiconductor field effect transistor (MOSFET), insulated gate bipolar transistor (IGBT); Single and three phase configuration of uncontrolled and controlled rectifiers; DC to DC conversion: buck, boost and buck-boost converters; Bidirectional AC to DC voltage source converters, issues of line current harmonics, power factor, distortion factor of AC to DC converters, single phase and three phase inverters. | |
| 10. | Textbook(s): 1. Rashid M H, Power Electronics: Devices, Circuits and Applications, 3rd Edition, Pearson Education (2018). | |
| 11. | Reference(s): 1. Mohan N, Undeland T M and Robbins W P, Power Electronics: Converters, Applications, and Design, 3rd Edition, Wiley India (2018). | |