



- 1. Power semiconductor devices (8hrs)**
Survey of power semiconductor devices : Power diode, SCR, GTO, LASCR, TRIAC, BJT, MOSFET, IGBT etc., Turn-on and turn-off characteristics, switching losses, driver circuits, protection, cooling.
- 2. Rectifiers (12hrs)**
All types of rectifiers, Single phase and three phase converters, half and full waves
- 3. DC choppers (10hrs)**
Principle of chopper operation and control strategies, Step-up and step-down choppers, Types of chopper circuits, Voltage-commutated chopper, Current-commutated chopper, Load-commutated chopper.
- 4. INVERTERS (12hrs)**
Single phase and three phase (both 120 mode and 180 mode) inverters – PWM techniques: Sinusoidal PWM, modified sinusoidal PWM - multiple PWM and Introduction to space vector modulations, Current source inverter, Multi-level inverters: types, operations and features.
- 5. AC-AC Converters (10hrs)**
AC voltage controller, types, single phase AC Controllers, three phase AC Controllers.
- 6. Industrial Applications (8hrs)**
General applications, DC motor control, Switched mode power supply (SMPS), Uninterruptible power supplies.

Recommended Textbook:

1. M. H. Rashid, "Power Electronics - Circuits, Devices and Applications", P.H.I Private Ltd. New Delhi, Second Edition, 1994
2. N. Mohan et.al. "Power Electronics- Converters, Applications and Design", John Wiley & Sons (Asia) Private Ltd., Singapore, 1996.
3. Power Electronics by C. W. Lander; McGraw Hill Publication