EES-708 SELECTED TOPICS IN POWER ELECTRONICS

Credit	L	T	P
4	**3**	**1**	**-**

UNIT-I
Review of Basics of Power electronics. Advance power electronics converter: Integrated boost inverter, H5, H6, Heric Topology. Type of faults & Protection schemes.

UNIT-II
Operation of DC-DC converter, inverter used in solar application, grid connection of solar inverter, MPPT.

UNIT-III
Modelling of DC-DC converter, Solar Inverter, Grid connected inverter, Stability Analysis. IEEE Standars, IEC standard, LVRT, HVRT, Anti Islanding.

UNIT-IV
Introduction to Power Management and Voltage Regulators Need of power management, power management applications, classification of power management, power delivery of a VLSI system, power conversion, discrete vs. integrated power management, types of voltage regulators (switching Vs linear regulators) and applications, converter's performance parameters (voltage accuracy, power conversion efficiency, load regulation, line regulation, line and load transient response, settling time, voltage tracking), local Vs remote feedback, kelvin sensing, Point-of-Load (POL) regulators.

UNIT-V
Introduction to Advanced Topics in Power Management Digitally controlled dc-dc converters, digitally controlled LDOs, adaptive compensation, dynamic voltage scaling (DVS), Single-Inductor Multiple-Outputs (SIMO) Converters, dc-dc converters for LED lighting, Li-ion battery charging circuits, Multiphase converters.

Additional topics:

Analysis of Converters for different applications
Simulation using PSIM

TEXT/REFFERENCE BOOKS

1. Ned Mohan, Undeland, Robin, "Power Electronics, Converters, Application and Design", John Wiley and Sons. Inc, New York, 2011.
2. P. C. Sen, "Power Electronics" Tata McGraw Hill Book Co., New Delhi.
3. G. K. Dubey, S.R. Doradla, A.Joshi and R.M.K. Sinha, "Thyristorised Power Controllers" Wiley Eastern Ltd., New Delhi.
4. M. H. Rashid, "Introduction to Power Electronics", Pearson Education India, New Delhi

Websites

www.nptel.ac.in