EEE

Sub.Code & Name:	**EE 827 Design of Embedded Controllers for Smart Micro-grid**
Chapter	
I	HDLs – VHDL & Verilog HDL - Modeling styles – structural – Behavioral – Dataflow - Design of simple/ complex combinational and sequential circuits using VHDL and Verilog HDL – Data types – Test bench and simulation.
II	Sensors and Special ICs – Voltage Sensor, Current Sensor, Speed Sensor, RMS calculation IC, Battery Management IC, Opto-couplers and Current amplification transistors.
III	Programmable Devices: Simple and Complex Programmable logic devices (SPLD and CPLDs), Field Programmable Gate Arrays (FPGAs), Internal components of FPGA - Programming technologies in FPGA ASIC Design flow.
IV	Typical FPGA board qualitative analysis: FPGA IC interfacing with peripherals: ADC, DAC, display (LED, LCD), Communication networks like Ethernet.
V	Study of a Smart Micro-grid model – Sensors interfacing with FPGA board – Design of Source and Load Controllers – Communication between the controllers – Concepts of Source and Load management.
Text Books	1. J. Bhaskar, 'VHDL Primer', BPB publications, 2000. 2. J. Bhaskar, 'Verilog HDL Primer', BPB publications, 2000. 3. Nazzareno Rossetti, "Managing Power Electronics: VLSI and DSP-driven Computing systems:, Wiley-Interscience Publications, 2006. 4. Krzysztof Iniewski, "Smart Grid Infrastructure & Networking", Mc-Graw Hill Education (India) Limited, 2012.
References	M. J. S. Smith, 'Application Specific Integrated Circuits', Addison Wesley, 1997.

(Guide)

Course Co-ordinator & DC

Senate