



POST GRADUATES

I SEM

ADVANCED POWER ELECTRONICS: PGPEPS101T

Year of Study 2017-2018

- CO 1: Develop in depth knowledge of advanced power electronics devices.
- CO 2: Study, design and analyze the ac to ac converters.
- CO 3: Understand and analyze various resonant and soft switching techniques for converters. Study, design and analyze the dc to ac converters.
- CO 4: Understand the operation of modern power converters and multilevel inverters.
- CO 5: Understand the basic principles of power electronics in drives and its control, types of drives and basic requirements placed by mechanical systems on electric drives.
- CO 6: Understand the operation of 1 ϕ & 3 ϕ converter drives for separately excited & series DC motors.
- CO 7: Learn speed control of induction motor drives in an energy efficient manner using power electronics.

POWER SYSTEM MODELLING: PGPEPS102T

Year of Study 2017-2018

- CO 1: Understand the operational behaviour and problems of two machine and multi-machine power system for stability study
- CO 2: To obtain the equivalent circuit, its parameters and simulation model for various components including loads in power system for static and dynamic stability studies.
- CO 3: Simulation and analysis of Dynamics of synchronous generator connected to infinite bus or multi machine power system.
- CO 4: To develop analytical approach and program tools for testing transition processes in power system.
- CO 5: Find equivalent pi model, sending and receiving end power using circle diagram, efficiency & regulation of long transmission line and compare the same with medium and short transmission lines.
- CO6: Find effective inductance under open and short circuit condition, draw per phase equivalent circuit of three-phase transformers and compare complex ideal transformers with simple ideal transformer.
- CO 7: Analyze three phase armature currents, field current and different reactance's in d-q frame at different operating conditions.
- CO 8: Compare the static and dynamic loads and their performance at different frequencies and voltages.

ADVANCED CONTROL THEORY: PGPEPS103T

Year of Study 2017-2018

- CO 1: Develop mathematical models of physical systems.
- CO 2: Design optimal controllers for physical systems including power electronic and power systems.
- CO 3: Analyze the issues related to the stability of automatic control systems.
- CO 4: Design complex nonlinear systems by linearizing them.

POWER SYSTEM DYNAMICS & CONTROL: PGPEPS104T

Year of Study 2017-2018

- CO 1: To understand short circuit and stability studies of components of power system.
- CO 2: To understand controls for improvement in transient stability.
- CO 3: To analyze the effects of various faults for multi machine systems.
- CO 4: To understand the role of advanced technologies to improve transient stability.
- CO 5: To study and analyze the Augmentation of stability.

**APPLICATION OF MICROCONTROLLER
IN ELECTRICAL SYSTEM: PGPEPS104T****Year of Study 2017-2018**

- CO 1: Understand the causes, effects and remedies of power quality problems.
- CO 2: To design a system, component or process as per needs and specifications
- CO 3: To Write Assembly language program for 8051 Microcontroller to achieve solution to given Task.
- CO 4: To learn functioning of Signal conditioning using specific circuits/ transducers and to measure electrical or non electrical quantities using processor.
- CO 5: To apply applications of microcontroller in various engineering fields.

MICRO & SMART GRID: PGPEPS104T**Year of Study 2017-2018**

- CO 1: Microgrid concepts, Power Electronics interface in AC & DC microgrids, Communication infrastructure, modes of operation and control, Protection and islanding issues, etc
- CO 2: Power quality issues in microgrids like modeling and stability analysis, regulatory standards and economics and basic smart grid concepts
- CO 3: Load and generation Power flow analysis, economic dispatch and unit commitment problems and various verticals of smart grid
- CO 4: Smart grid communication and measurement technologies like Phasor Measurement Unit(PMU), Smart meters, Wide Area Monitoring system(WAMS) etc
- CO 5: Penetration of Renewable Energy Sources in smart grid and associated issues and their applications in Electric vehicles etc

ARTIFICIAL INTELLIGENCE: PGOPEN105T**Year of Study 2017-2018**

- CO 1: Design and implement key components of intelligent agents and expert systems.
- CO 2: To apply knowledge representation techniques and problem solving strategies to common AI applications.
- CO 3: Apply and integrate various artificial intelligence techniques in intelligent system
- CO 4: Development as well as understand the importance of maintaining intelligent systems.
- CO 5: Build rule-based and other knowledge-intensive problem solvers.

UTILIZATION OF ELECTRICAL ENERGY: PGOPEN105T**Year of Study 2017-2018**

- CO 1: To select their electric drive system based on application and availability of power source.
- CO 2: Apply power electronics technology in efficient utilization of electrical heating
- CO 3: Apply power electronics technology in efficient utilization of electrical welding Create lighting system using illumination fundamentals and various illumination Technologies.
- CO 4: Analyze effective utilization of Power Electronic technologies in Electrical Traction.

II SEM**HVDC & FACTS: PGPEPS201T****Year of Study 2017-2018**

- CO 1: Describe types of topology and multi terminal HVDC System
- CO 2: Describe converter operation in various modes. •Describe converter control modes
- CO 3: Describe the application of filters to eliminates harmonics
- CO 4: Analyse the fault in HVDC system and provide proper protection.
- CO 5: Apply knowledge of FACTS controller to AC transmission system
- CO 6: Apply shunt, series and their combination for compensation. Identify, formulate and solve network problems with FACTS controller.
- CO 7: Understand the basic requirements in AC transmission and limitations of AC transmission systems.
- CO 8: Understand the role of voltage, angle and impedance as important factors in AC power

flow.

CO 9: Understand the operating characteristic of various FACTS controllers and their role on enhancing maximum power transfer capacity of power transmission systems.

CO [10]: Understand the various methods of controlling voltage, angle and impedance in AC transmission system.

CO [11]: Establish skill to model and analyze FACTS devices in power transmission system operation. Understand the causes, effects and remedies of power quality problems.

POWER QUALITY: PGPEPS202T

Year of Study 2017-2018

CO 1: Identify the various power quality events like short and long duration variations, Waveform distortion, Unbalance, Transients, Power factor etc.

CO 2: Analyze the power quality issues using the Power quality indices.

CO 3: Suggest suitable mitigation strategies for some of the power quality issues.

CO 4: Provide solution for the mitigation of power quality issues like waveform distortion, unbalance, and poor power factor.

CO 5: Analyze various power quality issues as sag, flicker, waveform distortion, unbalance, transients, etc. •Suggest suitable mitigation strategies for some of the power quality issues

CO6: Provide solution for the mitigation of power quality issues like harmonic distortion, unbalance, poor power factor.

ADVANCED ELECTRICAL DRIVES: PGPEPS203T

Year of Study 2017-2018

CO 1: Select the suitable drive for drive system such as phase angle controlled, chopper-controlled dc drive depending upon its rating.

ENERGY AUDIT & MANAGEMENT: PGPEPS204T

Year of Study 2017-2018

CO 1: An ability to develop in depth knowledge for energy balance and understand the various acts for the same

CO 2: To carry out energy audits for optimal use of energy.

CO 3: An ability to understand billing process for various industrial applications and selection of the factors for better utilization of energy.

CO 4: Understand energy conservation in thermal power station.

CO 5: Carry out performance analysis of electrical appliances and related case studies for improvement.

CONVERTERS FOR NON CONVENTIONAL ENERGY SOURCES: PGPEPS204T

Year of Study 2017-2018

CO 1: An ability to develop in depth knowledge for WEC and PV based system.

CO 2: An ability to develop in depth knowledge for analysis of grid connected WEC and PV system.

CO 3: Able to understand the various power electronic converter topologies.

CO 4: Able to use the basics of various converter topologies in the photovoltaic system operation.

CO 5: Able to use the basics of various converter topologies in the wind energy conversion system.

POWER SYSTEM PLANNING: PGPEPS204T

Year of Study 2017-2018

CO 1: Understanding some advanced concepts of power planning.

CO 2: Able to use the basics of load forecasting generation planning that will be useful for engineering professional practice in the power sector operation.

CO 3: Able to use the basics of transmission planning that will be useful for engineering professional practice in the power sector operation

CO 4: Understanding concepts of power system reliability that will be useful for engineering professional practice in the power sector operation and planning.

CO 5: Able to understand the System Operation & Environmental Aspects in planning that will be useful for engineering professional practice in the power sector.

RESEARCH METHODOLOGY: PGFD205T

Year of Study 2017-2018

CO 1: Knowledge on various kinds of research questions and research designs

CO 2: Formulate research problems (task) and develop a sufficiently coherent research design

CO 3: Assess the appropriateness of different kinds of research designs knowledge on qualitative, quantitative and mixed methods of research, as well as relevant ethical and philosophical considerations

CO 4: Develop independent thinking for critically analyzing research reports

III SEM

PLC & SCADA: PGOPEN301T

Year of Study 2017-2018

CO 1: Students will take part in all sorts of PLC system.

CO 2: Students will be in condition to deal with the problems of PLC programming.

CO 3: They will find out the real time schedule of operation of advanced PLC function.

CO 4: Students will be in condition to deal with various PLC applications.

CO 5: They will handle the problems related with automation and SCADA.

DIGITAL CONTROL SYSTEM: PGFD302T

Year of Study 2017-2018

CO 1: Students will be able to derive and design various stability techniques for improving performance of the system

CO 2: Students will be able to analyze continuous time system using state space technique.

CO 3: Students will be able to derive and describe pole placement by state variable technique and condition for controllability and observability of the system

CO 4: Students will be in condition to deal with various Digital control system applications.

PROJECT PLANNING & MEASUREMENT: PGFD302T

Year of Study 2017-2018

CO 1: Establish measures of success

CO 2: Quantify value commensurate with cost

CO 3: Optimize use of organizational resources

CO 4: Incorporate quality principles



**Principal
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