



**Late Purushottam Hari (Ganesh) Patil Shikshan Sanstha's
Mauli Group of Institution's,
College of Engineering & Technology, Shegaon.**

**Department of Electrical Engineering
M.E. Electrical Power System
Session (2018-19)**

Course Outcomes:

SEMESTER- I

Subject: ACS (EP2101)

At the end of course the student will be able:

- 1.To describe role of signal processing in digital control.
- 2.To explain Z domain and implementation of digital controllers.
- 3.To analyze control system design and digital compensator design.
- 4.To understand state space techniques and concept of controllability and observability.
- 5.To describe digital processors and sampled continuous Time plants.
- 6.To illustrate the pole placement design and state observers.

Subject: CAPSA (EP2102)

At the end of course the student will be able:

- 1.To represent power system components into mathematical model.
2. To develop the load flow analysis techniques.
- 3.To formulate bus impedances and admittances matrices by algorithm.
4. To examine State Estimation in Power System
5. To examine reactive power allocation scheduling.
- 6.To illustrate Concept of Load frequency control and its applications

Subject: DSPA (EP2103)

At the end of course the student will be able:

- 1.To identify different continuous and discrete time signals and systems .
2. To describe concept of time frequency analysis using Z- Transform.
- 3.To drive Discrete Fourier Transform, Fast fourier Transform (FFT) algorithms for faster realization of signals and systems.
4. To design FIR and IIR filters by hand to meet specific magnitude and phase requirements.
5. To design and analyze different types of filters and explain multirate signal processing.
- 6.To describe applications of DSP in different fields of Electrical engineering.

Subject: AED (EP2104)

At the end of course the student will be able:

- 1.To illustrate various electrical drives and their characteristics .
2. To describe various methods of speed control of DC motors.
- 3.To explain various methods of speed control of Induction motors.
4. To illustrate self-controlled synchronous motor drives and traction drives.
5. To analyze, performance and stability of synchronous and asynchronous drives.
- 6.To understand Inverter fed AC Drives: Constant V/f controlled induction motors, controlled current and controlled slip operations.



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Subject: DPPS (EP2105)

At the end of course the student will be able:

1. To illustrate block diagram of numerical relay, sampling theorem, correlation with a reference wave, least error squared (LES) technique.
2. To describe Protection scheme of transmission line, distance relays, traveling wave relays, digital protection scheme based upon fundamental signal.
3. To explain faults in synchronous generator, protection schemes for synchronous generator.
4. To illustrate faults in a transformer, schemes used for transformer protection.
5. To analyze Directional instantaneous IDMT over current relay, directional multi-zone instantaneous relay, distance relay setting. co-ordination of distance relays
6. To understand Types of faults, assumptions, development of algorithm for S.C. studies, PC based integrated software for S.C. studies, transformation to component quantities, S.C. studies of multiphase systems

SEMESTER -II

Subject: PSDC (EP2201)

At the end of course the student will be able:

1. To illustrate Power system stability states of operation and system security, system dynamics Problems.
2. To design power system components for stability studies: Generators, transmission lines, Excitation and prime mover controllers, flexible AC transmission (FACTS) controllers.
3. To Analyze single machine and multi-machine systems.
4. To Analyze Eigenvalue analysis, Mitigation using power system stabilizers and supplementary modulation control of FACTS devices
5. To understand Small signal angle instability (sub-synchronous frequency oscillations)
6. To verify Transient stability controllers, Introduction to voltage Instability analysis of voltage Instability.

Subject: EMAC (EP2202)

At the end of course the student will be able:

1. To illustrate Essentials of rotating electrical machines, Conventional analysis of electrical machines
2. To design Linear Transformation n Machines, Invariance of power, transformation from a displaced brush-axis.
3. To understand Three phase induction motor- transformation methods (stationary, rotor and synchronous frames)
4. To represent Park transformation. Drives, various Control techniques
5. To understand Permanent magnet synchronous motors- machine model (d-q) and control methods Switched reluctance motor drive
6. To verify Steady state and transient performance, Phasor diagram and power angle characteristics,



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Subject: PQIT (EP2203)

At the end of course the student will be able:

1. To analyze voltage variation like sag and swell, waveform distortion and harmonics and noise.
2. To analyze harmonic distortion and its measure with current and voltage limits like IEEE, IEC, EN, NORSOK.
3. To understand 2, 6 and 12 pulse converter configuration and their harmonic spectrum.
4. To understand causes and effects of harmonics, resonance and power system protection, measurement.
5. To understand high power factor and multi pulse converters, passive filters and its types with design criteria.
6. To understand Compensation principle, classification of active filters ,its system con figuration ,PWM inverter ,voltage and current source active filters

Subject: HVDC Transmission (EP2204)

At the end of course the student will be able:

1. To understand the importance of HVDC transmission, its analysis and application of HVDC and EHVAC transmission system.
2. To calculate transmission line parameter, sequence impedance and sequence networks for transmission line and various 3-phase transformer connection.
3. To understand the HVDC Converter, characteristic and its control, equivalence of DC system in AC system, per unit system.
4. To understand the series and parallel operation of Convertors and Load flow analysis of Alternating and Direct current.
5. To understand the phenomenon of Corona, Radio interference due to Corona, factor affecting Corona, calculation of Voltage Gradient.
6. To understand the Lightning phenomenon, its mechanism and different aspect, different theories of charge formation in cloud.

Subject: APEPS (EP2205)

At the end of course the student will be able:

1. To analyze un-compensation & various compensation techniques, their effect on power transfer capacity.
2. To analyze FACTS principles of series and shunt compensation such as SVC, TCSC and SPS.
3. To identify STATCOM, SSSC & UPFC compensation by static condenser.
4. To optimize modeling of FACTS controllers and the analysis of power quality issues.
5. To analyze series parallel resonances, harmonic power flow, their mitigation techniques and description of various filters.
6. To analyze IEEE standards related with power quality issues. Operation and application of UPFC.

Dr.M.A.Beg
HOD

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