Faculty of Engineering & Technology

KAKATIYA UNIVERSITY, WARANGAL-506 009

Department of Electrical & Electronics Engineering

B. Tech. (EEE) VIII SEMESTER

S. No.	Category-Course Code	Course Title	Scheme of Instruction			Contact hr/week	Scheme of Examination		Credits
			L	T	P		CIE	SEE	
Theory									
1	**Professional Elective-V**		3	0	0	3	30	70	3
	PE-4201EE	Non-Conventional Energy Sources							
	PE-4202EE	Special Electrical Machines							
	PE-4203EE	AI Techniques in Electrical Engineering							
2	**Professional Elective-VI**		3	0	0	3	30	70	3
	PE-4204EE	Smart Grid Technologies							
	PE-4205EE	Machine Modelling and analysis							
	PE-4206EE	Modern Power Electronics							
3	**Open Elective-III**		3	0	0	3	30	70	3
	OE-4207ME	Optimization Techniques							
	OE-4208EC	Embedded System Design							
	OE-4209CS	Information Security							
	OE-4210HS	Start-up entrepreneurship							
Practical									
4	PC-4211EE	Electrical Simulation Lab	0	0	2	2	25	50	1
5	PW-4212EE	Project Stage-II	0	0	10	10	150	100	5
	Total		**9**	**0**	**12**	**21**	**265**	**360**	**15**

L : Lectures
P : Practicals
T : Tutorials
CIE : Continuous Internal Evaluation
SEE : Semester End Examination
PC : Professional Core
HS : Humanity Science

PE-4201EE-NON-CONVENTIONAL ENERGY SOURCES

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

Review of Conventional and Non-Conventional energy sources - Need for non-conventional energy sources Types of Non- conventional energy sources - Fuel Cells - Principle of operation with special reference to H_2O_2 Cell - Classification and Block diagram of fuel cell systems - Ion exchange membrane cell - Molten carbonate cells - Solid oxide electrolyte cells - Regenerative system- Regenerative Fuel Cell - Advantages and disadvantages of Fuel Cells-Polarization - Conversion efficiency and Applications of Fuel Cells.

UNIT-II

Solar energy - Solar radiation and its measurements - Solar Energy collectors -Solar Energy storage systems - Solar Pond - Application of Solar Pond - Applications of solar energy.

UNIT-III

Wind energy- Principles of wind energy conversion systems - Nature of wind - Power in the Wind-Basic components of WECS -Classification of WECS -Site selection considerations -Advantages and disadvantages of WECS -Wind energy collectors -Wind electric generating and control systems - Applications of Wind energy -Environmental aspects.

UNIT- IV

Energy from the Oceans - Ocean Thermal Electric Conversion (OTEC) methods - Principles of tidal power generation -Advantages and limitations of tidal power generation -Ocean waves - Wave energy conversion devices -Advantages and disadvantages of wave energy - Geo-Thermal Energy - Types of Geo-Thermal Energy Systems - Applications of Geo-Thermal Energy.

UNIT-V

Energy from Biomass - Biomass conversion technologies / processes - Photosynthesis - Photosynthetic efficiency - Biogas generation - Selection of site for Biogas plant - Classification of Biogas plants - Details of commonly used Biogas plants in India - Advantages and disadvantages of Biogas generation -Thermal gasification of biomass -Biomass gasifiers.

Suggested Readings:

1. Rai G.D, Non-Conventional Sources of Energy, Khandala Publishers, New Delhi, 1999.
2. M.M. El-Wakil, Power Plant Technology. McGraw Hill, 1984.

PE-4202EE -SPECIAL ELECTRICAL MACHINES

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

SYNCHRONOUS RELUCTANCE MOTORS

Constructional features – Types – Axial and Radial flux motors – Operating principles – Variable Reluctance Motors – Voltage and Torque Equations – Phasor diagram – performance characteristics – Applications.

UNIT-II

STEPPER MOTORS

Constructional features – Principle of operation – Variable reluctance motor – Hybrid motor – Single and multi-stack configurations – Torque equations – Modes of excitation – Characteristics – Drive circuits – Microprocessor control of stepper motors – Closed loop control – Concept of lead angle – Applications.

UNIT-III

SWITCHED RELUCTANCE MOTORS (SRM)

Constructional features – Rotary and linear SRM – Principle of operation –Torque production – Steady state performance prediction – Analytical method – power converters and their controllers – Methods of rotor position sensing – Sensor less operation – characteristics and closed loop control – applications.

UNIT-IV

PERMANENT MAGNET BRUSHLESS D.C. (BLDC) MOTORS

Permanent magnet materials – Minor hysteresis loop and recoil line – Magnetic characteristics – Permeance coefficient – Principle of operation – Types – Magnetic circuit analysis – EMF and torque equations – Commutation – Power converter circuits and their controllers – Motor characteristics and control – Applications.

UNIT-V

PERMANENT MAGNET SYNCHRONOUS MOTORS (PMSM)

Principle of operation – Ideal PMSM – EMF and torque equations – Armature MMF – Synchronous Reactance – Sine wave motor with practical windings – Phasor diagram – Torque/speed characteristics – Power controllers – Converter volt-ampere requirements – Applications.

TEXT BOOKS:

1. K.Venkataratnam, ‘Special Electrical Machines’, Universities Press (India) Private Limited, 2008.
2. T.J.E. Miller, ‘Brushless Permanent Magnet and Reluctance Motor Drives’, Clarendon Press, Oxford, 1989.
3. T.Kenjo, ‘Stepping Motors and Their Microprocessor Controls’, Clarendon Press London, 1984.

REFERENCES:

1. R.Krishnan, 'Switched Reluctance Motor Drives – Modeling, Simulation, Analysis, Design and Application', CRC Press, New York, 2001.
2. P.P. Aearnley, 'Stepping Motors – A Guide to Motor Theory and Practice', Peter Perengrinus London,1982.
3. T. Kenjo and S. Nagamori, 'Permanent Magnet and Brushless DC Motors', Clarendon Press, London,1988.
4. E.G. Janardanan, 'Special electrical machines',PHI learning Private Limited, Delhi,2014.

PE-4203EE -AI TECHNIQUES IN ELECTRICAL ENGINEERING

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

ARTIFICIAL NEURAL NETWORKS

Introduction, Models of Neuron Network-Architectures –Knowledge representation, Artificial Intelligence and Neural networks–Learning Process-Error correction learning, Hebbian learning – Competitive learning-Boltzmann learning, supervised learning-Unsupervised learning– Reinforcement learning-Learning tasks.

UNIT-II

ANN PARADIGMS

Multi-layer perceptron using Back propagation Algorithm (BPA), Self –Organizing Map (SOM), Radial Basis Function Network-Functional Link Network (FLN), Hopfield Network.

UNIT-III

FUZZY LOGIC

Introduction –Fuzzy versus crisp, Fuzzy sets-Membership function –Basic Fuzzy set operations, Properties of Fuzzy sets –Fuzzy Cartesian Product, Operations on Fuzzy relations –Fuzzy logic– Fuzzy Quantifiers, Fuzzy Inference-Fuzzy Rule based system, Defuzzification methods.

UNIT-IV

GENETIC ALGORITHMS

Introduction-Encoding –Fitness Function-Reproduction operators, Genetic Modeling –Genetic operators- Cross over-Single site cross over, two-point cross over –Multi point cross over Uniform cross over, Matrix cross over-Cross over Rate-Inversion & Deletion, Mutation operator –Mutation –Mutation Rate- Bit-wise operators, Generational cycle-convergence of Genetic Algorithm.

UNIT-V

APPLICATIONS OF AI TECHNIQUES

Load forecasting, Load flow studies, Economic load dispatch, Load frequency control, Single area system and two area system, Reactive power control , Speed control of DC and AC Motors.

TEXT BOOKS

1. S.Rajasekaran and G.A.V.Pai Neural Networks, Fuzzy Logic &GeneticAlgorithms,PHI, New Delhi,2003.
2. Rober J. Schalkoff, Artificial Neural Networks, Tata McGraw Hill Edition,2011.

REFERENCES:

1. P.D.Wasserman; Neural Computing Theory & Practice, Van Nostrand Reinhold, New York, 1989.
2. Bart Kosko; Neural Network & Fuzzy System, PrenticeHall,1992
3. D.E.Goldberg, Genetic Algorithms, Addison-Wesley 1999.

PE-4204EE -SMART GRID TECHNOLOGIES

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

Introduction to Smart Grid: Working definitions of Smart Grid and Associated Concepts – Smart Grid Functions-comparison of Power Grid and Smart Grid-New Technologies for Smart Grid – Advantages – Present development and international policies in Smart Grid, Indian Smart Grid. Key Challenges for Smart Grid. Components and Architecture of Smart Grid-Description.

UNIT-II

DC Distribution and Smart Grid: AC Vs DC Sources-Benefits of and drives of DC power delivery systems – Powering equipment and appliances with DC-Data centers and information technology loads equipment and appliances with DC-Data centers and information technology loads – Future neighbourhood Potential future work and research.

UNIT-III

Smart Grid Communications and Measurement Technology: Communication and Measurement – Monitoring, Phasor Measurement Unit (PMU), Smart Meters, Wide area measurement System (WAMS).

UNIT-IV

Renewable Energy and Storage: Introduction to Renewable Energy Technologies-Micro Grids-Storage Technologies-Electric Vehicles and plug-in Hybrids-Environmental impact and Climate Change-Economic Issues. Grid integration issues of renewable energy sources.

UNIT-V

Smart Power Grid System Control: Load Frequency Control (LFC) in Micro Grid System – Voltage Control in Micro Grid System, Reactive Power Control in Smart Grid.

Suggested Readings:

1. Stuart Borlase, Smart Grids, Infrastructure, Technology and Solutions, CRC Press, 2013.
2. A.G. Phadke and J.S. Thorp, “Synchronized Phasor Measurements and their Application”, Springer Edition, 2010.
3. Iqbal Hussein, “Electric and Hybrid Vehicle: Design fundamentals”, CRC Press, 2003.
4. Gil Masters, Reneable and Efficient Electric Power System, Wiley-IEEE Press, 2004.
5. Fereidoon P. Sioshansi, “Smart Grid: Integrating Renewable, Distributed & Efficient Energy”, Academic Press, 2012.
6. Jean Claude Sabonnadiere, NouredineHadjsaid, “Smart Grids”. Wiley-ISTE, IEEE Press, May 2012

PE-4205EE - MACHINE MODELLING AND ANALYSIS

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

Basic Two-pole DC machine - primitive 2-axis machine – Voltage and Current relationship – Torque equation.

UNIT-II

Mathematical model of separately excited DC motor and DC Series motor in state variable form – Transfer function of the motor - Numerical problems. Mathematical model of D.C. shunt motor D.C. Compound motor in state variable form – Transfer function of the motor - Numerical Problems

UNIT-III

Liner transformation – Phase transformation (a, b, c to α, β, o) – Active transformation (α .β, o to d, q). Circuit model of a 3 phase Induction motor – Linear transformation - Phase Transformation – Transformation to a Reference frame – Two axis models for induction motor. dq model based DOL starting of Induction Motors.

UNIT-IV

Voltage and current Equations in stator reference frame – equation in Rotor reference frame – equations in a synchronously rotating frame – Torque equation - Equations I state – space form.

UNIT-V

Circuits model of a 3ph Synchronous motor – Two axis representation of Synchronous Motor. Voltage and current Equations in state – space variable form – Torque equation. dq model based short circuit fault analysis-emphasis on voltage, frequency and recovery time.

TEXT BOOKS:

1. Analysis of electric machinery and Drive systems- Paul C. Krause , Oleg Wasynezuk, Scott D. Sudhoff, third edition, IEEE press
2. Generalized Machine theory P.S. Bimbhra, Khanna Publishers, 2002

REFERENCES:

1. Thyristor control of Electric Drives - Vedam Subramanyam, Tata McGraw-Hill Education, 1988
2. Power System Stability and Control – Prabha Kundur, EPRI.

PE-4206EE -MODERN POWER ELECTRONICS

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT – I

High-Power Semiconductor Devices: Introduction, High-Power Switching Devices, Diodes, Silicon-Controlled Rectifier (SCR), Gate Turn-Off (GTO) Thyristor, Gate-Commutated Thyristor (GCT), Insulated Gate Bipolar Transistor (IGBT), Other Switching Devices, Operation of Series-Connected Devices, Main Causes of Voltage Unbalance, Voltage Equalization for GCTs.

UNIT-II

Cascaded H-Bridge Multilevel Inverters: Introduction, Sinusoidal PWM, Modulation Scheme, Harmonic Content, over modulation, Third Harmonic Injection PWM, Space Vector Modulation, Switching States, Space Vectors, Dwell Time Calculation, Modulation Index, Switching Sequence, Spectrum Analysis, Even-Order Harmonic Elimination, Discontinuous Space Vector Modulation. Introduction, H-Bridge Inverter, Bipolar Pulse-Width Modulation, Unipolar Pulse-Width Modulation.

UNIT – III

Diode-Clamped Multilevel Inverters: Three-Level Inverter, Converter Configuration, Switching State ,Commutation, Space Vector Modulation, Stationary Space Vectors , Dwell Time Calculation, Relationship Between V_refLocation and Dwell Times, Switching Sequence Design, Inverter Output Waveforms and Harmonic Content , Even-Order Harmonic Elimination, Neutral-Point Voltage Control, Causes of Neutral-Point Voltage Deviation, Effect of Motoring and Regenerative Operation, Feedback Control of Neutral-Point Voltage

UNIT – IV

DC-DC Switch-Mode Converters & Switching DC Power Supplies Control of dc-dc converter, Buck converter, boost converter, buck-boost converter, cuk dc-dc converter, full bridge dc-dc converter, dc-dc converter comparison. Introduction, linear power supplies, overview of switching power supplies, dc-dc converters with electrical isolation, control of switch mode dc power supplies, power supply protection, and electrical isolation in the feedback loop, designing to meet the power supply specifications.

UNIT – V

Resonant Converters & Power Conditioners and Uninterruptible Power Supplies Classification of resonant converters, basic resonant circuit concepts, load-resonant converters, resonant-switch converters, zero-voltage-switching, resonant-dc-link inverters with zero-voltage switching's, high frequency-link integral-half cycle converters. Power line disturbances, Introduction to Power Quality, power Conditioners, uninterruptible power supplies, Applications.

Text Books:

1. “M. H. Rashid”, Power electronics circuits, Devices and applications, PHI, I edition – 1995.
2. “Ned Mohan, Tore M. Undeland and William P. Robbins, A”, “Power Electronics converters, Applications and Design” John Wiley & Sons, Inc., Publication, 3rd Edition 2003

Reference Books:

1. “Bin Wu, A”, “High-Power Converters and Ac Drives” John Wiley & Sons, Inc., Publication (Free down load from rapidshire.com) 2006.

OE-4207ME-OPTIMIZATION TECHNIQUES

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

Introduction: Statement of an optimization problem, Classification of optimization problems, Overview of various optimization Techniques, Properties of vectors, norms, positive semi-definite matrices.

UNIT-II

Classical optimization techniques: Single variable optimization, Multivariable optimization, Convexity and concavity of functions of one and two variables, convex optimization problems, the simplex optimization technique, Test Functions.

UNIT-III

Unconstrained optimization: General properties of minimization algorithms, Line search, the gradient method, Newton's method, least square Algorithm.
Constrained optimization: Active constraints versus inactive constraints, transformations

UNIT-IV

Genetic algorithm (GA): Fundamentals of Genetic algorithm, History, Basic concepts, working principle, Applications of GA.
Swarm intelligence: Basic particle swarm optimization, initialization techniques, Theoretical investigations and parameter selection, Design of PSO algorithm using computational statistics, Application of PSO.

UNIT-V

Differential Evolution: Classical differential evolution- An outline, Mutation, cross over, selection, Teaching learning based optimization (TLBO), applications of TLBO for standard Bench mark test functions.

Suggested Readings:

1. Richard W Daniels, An Introduction to Numerical Methods and Optimization Techniques, Elsevier North Holland Inc,
2. S Rajasekharan, G.A Vijaya Lakshmi Pai, Neural Networks, Fuzzy logic, and Genetic algorithms, Synthesis and Applications, Prentice hall of India, 2007
3. Rao, S.S., *"Engineering Optimization: Theory and Practice",* John Wiley & Sons, Inc., 2009
4. Taha, H.A., *"Operations Research, Pearson Education India",* New Delhi, India, 2008.
5. Randy L. Haupt and Sue Ellen Haupt, *"Practical genetic algorithms"* second edition, a John Wiley & sons, inc., publication -2004.

OE-4208EC-EMBEDDED SYSTEM DESIGN

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT-I

Introduction to Embedded Systems: The Embedded Design Life Cycle - Product Specification, Hardware/Software Partitioning, Iteration and Implementation, Detailed Hardware (selection of processor) and Software Design, Hardware/Software Integration, Product Testing and Release, Maintenance and Upgradation.

UNIT-II

ARM Embedded Systems: The RISC design philosophy, The ARM design philosophy, ARM processor fundamentals, registers, current program status register, pipeline, exceptions, interrupts, and vector table

UNIT-III

Embedded processing with ARM CORTEX on Zynq: Fundamentals of FPGA, types of FPGA, case study of Xilinx FPGA, Processing System, programmable logic, programmable logic interfaces, security,

UNIT-IV

Embedded Software Development Tools: Host and Target Machines, Cross Compilers, Cross Assemblers, Tool Chains, Linkers/Locators for Embedded Software, Address Resolution, Locator Maps.

UNIT-V

Introduction to Real Time Operating Systems: Tasks and task states, tasks and Data, Semaphores and shared data. Operating system services: Message queues, mailboxes and pipes, timer functions, events, memory management,

Suggested Readings:

1. Arnold S Berger, "*Embedded Systems Design*", South Asian edition, CMP Books, 2005.

2. Andrew Sloss, Dominic Symes, Chris Wright, *"ARM System Developer's Guide: Designing and Optimizing System Software"*, Elsevier, 2004.

3. Louise H Crockett, Ross.A.Elliot et *al " The Zynq Book*" , Edition 1, Strathclyde academic media, July 2014.

4. David E Simon, *"An Embedded software primer"*, Pearson, 2012

OE-4209CS -INFORMATION SECURITY

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT – I

Introduction: Attacks on Computers and Computer Security: Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security services, Security Mechanisms, Threats, A model for Network Security.

UNIT – II

Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques (mono-alphabetic cipher, poly-alphabetic, one-time pad) encryption and decryption, symmetric and asymmetric key cryptography, key range and key size

UNIT – III

Symmetric key Ciphers: Block Cipher principles & Algorithms (DES, AES, RC4), Key distribution in symmetric system

UNIT – IV

Asymmetric key Ciphers: Principles of public key crypto systems, Public key Algorithms: RSA, Diffie-Hellman, ECC, Key Distribution Key in asymmetric system.

UNIT – V

Authentication: Message Authentication Algorithms and Hash Functions: Authentication requirements, Functions, Message authentication codes, Hash Functions, Secure Hash Algorithm-1, Digital signatures, MD5.

Text Books

1. Cryptography and Network Security : William Stallings, Pearson Education,4″‘ Edition
2. Information Security, Principles and Practice: Mark Stamp, Wiley India.

References

1. Cryptography and Network Security: C K Shyamala, N Harin i, Dr T R Padmanabhan, Wiley India,1”Edition.
2. Cryptography and Network Security : Forouzan Mukhopadhyay, MC Graw Hill, 2″” Edition.
3. Cryptography and Network Security : Atul Kahate, Mc Graw hill Edition.
4. Introduction to Network Security: Neal Krawetz, CENGAGE Learning.

OE-4210HS-START-UP ENTERPRENEURSHIP

Credits:3

Class: **B. Tech VIII Semester** *Lectures*: **3**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **30 Marks**
Duration of SEE: **3 hours** *SEE*: **70 Marks**

UNIT–I

Creativity &Discovery: Definition of Creativity, self-test creativity, discovery and delivery skills, the imagination threshold, building creativity ladder, Collection of wild ideas, Benchmarking the ideas, Innovative to borrow or adopt, choosing the best of many ideas, management of tradeoff between discovery and delivery

UNIT– II

From Idea to Startup: Introduction to think ahead backward, Validation of ideas using cost and strategy, visualizing the business through value profile, activity mapping, Risks as opportunities, building your own roadmap

UNIT– III

Innovation career lessons: Growing & Sharing Knowledge, The Role of Failure In Achieving Success, Creating vision, Strategy, Action Resistance: Differentiated Market Transforming Strategy; Dare to Take Action; Fighting Resistance; All About the startup Ecosystem; Building a Team; Keeping it Simple and Working Hard.

UNIT–IV

Action driven business plan: Creating a completed non-business plan, including a list of the activities to be undertaken, with degrees of importance. A revision of the original product or service idea, in light of information gathered in the process, beginning to design the business or organization that will successfully implement your creative idea.

UNIT–V

Startup financing cycle: Preparing an initial cash flow statement, showing money flowing out and flowing in. Estimateyourcapitalneedsrealistically.Prepareabootstrappingoption(self-financing). Prepare a risk map. Prepare a business plan.

Suggested Readings:

1. VasantDesai,*"DynamicsofEntrepreneurialDevelopmentandManagement"*, HimalayaPublishingHouse, 1997.
2. PrasannaChandra,*"Project–Planning, Analysis,Selection,ImplementationandReview",*TataMcGraw-HillPublishingCompanyLtd.,1995.
3. B.Badhai,"*EntrepreneurshipforEngineers*",DhanpathRai&Co.,Delhi,2001.
4. StephenR.CoveyandA.RogerMerrill,"*FirstThingsFirst",*SimonandSchuster,2002.
5. RobertD.HisrichandMichaelP.Peters,*"Entrepreneurship*",TataMcGrawHillEdition, 2002.

PC-4211EE -ELECTRICAL SIMULATION LAB

Credits:1

Class: **B. Tech VIII Semester** *Practical*: **2**, *Tutorial*:**0**
Branch: **EEE** *CIE*: **25 Marks**
Duration of SEE: **3 hours** *SEE*: **50 Marks**

Simulation experiments should be conducted in the area of Electrical Circuits, Power Systems, Control Systems and Electrical Drives using software like MATLAB/Simulink/PSPICE/PSIM/MIPOWER/PSCAD etc.,

I. Electrical Circuits:

1. Transient Response of series RLC, RL & RC circuits with sine and step inputs
2. Series and Parallel resonance
3. Verification of Network Theorems
    a. Thevenin's theorem
    b. Superposition theorem
    c. Maximum Power Transfer theorem

II. Power Systems:

4. Load flow analysis
5. Fault analysis
6. Transient Stability Studies

III. Control Systems:

7. Bode plot, Root-Locus plot and Nyquist Plot
8. Transfer Function analysis of a) Time response for step input (ii) Frequency response for Sinusoidal input.
9. Design of Lag, Lead and Lag-Lead compensators

IV. Electrical Drives:

10. Chopper fed DC Motor Drive
11. VSI/CSI Fed Induction Motor Drives, doubly fed Induction Motor, PWM
12. Control of BLDC Motor

B. Tech. (EEE) VIII Semester

OE-4212EE-PROJECT STAGE – II

Credits: 5

The aim of project work–II is to implement and evaluate the proposal made as part of project–I. Students can also be encourage to do full time internship as part of project work-II based on the common guidelines for all the departments. The students placed in internships need to write the new proposal in consultation with industry coordinator and project guide within two weeks from the commencement of instruction.

The department will appoint a project coordinator who will coordinate the following:

1. Re-grouping of students-deletion of internship candidates from groups made as part of project work-I
2. Re-Allotment of internship students to project guides
3. Project monitoring at regular intervals

All re-grouping/re-allotment has to be completed by the 1nd week of VIII semester so that students get sufficient time for completion of the project.

All projects (internship and departmental) will be monitored at least twice in a semester through student presentation for the award of sessional marks. Sessional marks are awarded by a monitoring committee comprising of faculty members as well as by the supervisor. The first review of projects for 75 marks can be conducted after completion of five weeks. The second review for another 75 marks can be conducted after 12 weeks of instruction.

Common norms will be established for the final documentation of the project report by the respective departments. The students are required to submit draft copies of their project report within one week after completion of instruction.