WITH EFFECT FROM THE ACADEMIC YEAR 2005-2006

SCHEME OF INSTRUCTION & EXAMINATION

B.E IV YEAR (REGULAR)

(ELECTRICAL & ELECTRONICS ENGINEERING)

SEMESTER - II

Sl. No.	Syllabus Ref.No	SUBJECT	Scheme of Instructions Periods per Week L/T	D/P	Scheme of Examination Dura-tion in Hrs	Maximum Marks Univ. Exam	Sessi-onals
		THEORY					
1.	EE 451	Utilization	**4**	**-**	**3**	**75**	**25**
2.		**Elective -II**	**4**	**-**	**3**	**75**	**25**
3.		**Elective - III**	**4**	**-**	**3**	**75**	**25**
4.	ME 472	Industrial Administration & Financial Management	**4**	**-**	**3**	**75**	**25**
		PRACTICALS					
1.	EE 481	Power System Lab	**-**	**3**	**3**	**50**	**25**
2.	EE 482	Project	**-**	**6**	**Viva Voce**	**Gr***	**50**
3.	EE 483	Seminar	**-**	**3**	**-**	**-**	**50**
4.	EE 484	Electrical Engg. Computer Simulation Lab	**-**	**3**	**3**	**50**	**25**
		TOTAL	**16**	**15**	**-**	**400**	**225**

* Excellent/ Very Good/ Good/Satisfactory/Unsatisfactory

Elective –II

EE 452 Electrical Power Distribution Engg.
EE 454 Advanced Control System
EE 456 Renewable Energy Sources
EE 460 Internet Programming
EE 453 High Voltage Engg.
EE 455 Optimization Methods

Elective -III

EE 457 Reliability Engineering
EE 412 Image Processing
EE 459 Technical Writing & Presentation Skills
LA 454 Intellectual Property Rights
EE 458 Electronic Instru., System
CS 472 Neural Networks

EE 451

UTILIZATION

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT-I

Industrial Heating: Advantages and methods of electric heating. Description, operation and performance of resistance oveans. Design of elements. Core type furnace, Coreloss type furnace, High frequency eddy current heating, Dielectric heating, Arc furnace. Electric Welding: Resistance welding, welding transformer and its rating. Various types of Electric arc welding and Electric resistance welding.

UNIT-II

Schematic Utilization and connection diagram for motor control. Two supply sources for 3-phase Induction motors. Direct reversing, remote control operation, jogging operations of induction motor. Contactor control circuit. Pushbutton control stations, Over load relays, limit switches, Float switches. Interlocking methods for reversing control. Staring of synchronous motor and motor protection.

UNIT III

Illumination: Introduction, nature and production of light, Sensitivity of the eye, Units of light. The inverse square law and cosine law, Solid angle, Lighting calculations, Determination of M.S.C.P, Rousseau's construction, Discharge lamps, Sodium vapor lamps, Mercury vapor lamps, Fluorescent lamps, Starting and power factor corrections, stroboscopic effects, Noen signs, Application to factory lighting, Street lighting and Flood lighting.

UNIT IV

Electric Traction: System of Electric Traction, Transmission of Drive, System of track electrification, Traction mechanics, Speed time curves, Tractive effort, Power of Traction motor, specific energy consumption, Mechanics of train movement, Coefficient of adhesion.

UNIT V

Traction Motors: Desirable characteristics, d.c series motors, a.c series motors, 3-phase induction motors, d.c motor series & parallel control, Shunt bridge transition, Energy saving, Batteries: Lead acid batteries, SMF batteries, Construction and maintenance, Charging and rating of batteries.

Suggested Readings:

- Pratap G, Art and Science of Utilization of Electric Power, Dhanpatrai & Sons, 1990
- K.B. Raina & S.K. Bhattacharya, Electrical Design, Estimating and Costing, Wiley Eastern Ltd, 1991
- G. K Dubey, Fundamentals of Electric Drives, Narosa Public House, Delhi, 2001

EE 452

ELECTRICAL POWER DISTRIBUTION ENGINEERING

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

Unit I

Introduction, Load characteristics, Diversified demand, Non-coincident demand, Coincidence factor, Contribution factor problems, Rate structure, Customer billing, Application of distribution transformers, Types of distribution transformers, Equivalent circuits, Single phase transformer connections, Three phase transformer connections, Auto transformer, Booster transformer, Phasor diagrams.

Unit II

Design of sub-transmission lines and distribution sub stations, sub station bus schemes, Rating of distribution sub station, service area with multiple feeders, Sub-station application curves, Percentage voltage drop calculations.

Unit III

Design considerations of primary systems, Radial type, Loop type primary feeder, primary feeder loading, uniformly distributed load application to a long line. Design considerations of secondary systems, Secondary banking, Secondary networks, Network transformers, General Total Annual Cost (TAC) equation with and without constraints, unbalanced loads and voltages.

Unit IV

Voltage drop and power loss calculations, 3-phase, Non 3-phase primary lines, Single phase two wire laterals with ungrounded neutral, single phase two wire Ungrounded laterals.

Unit V

Applications of capacitors to distribution systems, Effect of series and shunt capacitors. Power factor correction, Economic justification for capacitors, Best capacitor location.

Suggested Reading:

1. Turen Gonen, Electric Power Distribution Engineering, McGraw Hill Book Co., International Student Edition, 1986
2. A.S. Pabla Electric Power Distribution, Tata McGraw Hill Publishing Company Ltd., 1997

EE 453

HIGH VOLTAGE ENGINEERING

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

Unit I

Breakdown Mechanism of Gases, Liquids and Solids Materials: Mechanism of breakdown of Gases, Townsend's First Ionization coefficient, Cathode processes, Secondary effects, Townsend's Seco9nd ionization coefficient, Townsend's breakdown mechanism, The sparking potential, Paschen's law, Penning effect, Corona discharges, Time lag, Breakdown in liquid dielectrics, Treatment of transformer oil, Testing of transformer oil, breakdown in solid dielectrics.

Unit II

Generation of High D.C and A.C voltages: Half-wave rectifier circuit, Cockroft, Walton voltage multiplier circuit, Electrostatic generator, Van de Graf generator, Generation of high A.C voltages, Series resonant circuit.

Unit III

Generation of Impulse voltages and currents: Impulse generator circuits, analysis of circuits 'a' and 'b', multistage impulse generator circuit, Construction of impulse generator, Impulse current generation.

Unit IV

Measurement of High voltage and Currents: Sphere gap, Uniform field spark gap, Rod gap, electrostatic voltmeter, Generating voltmeter, chubb Fortescue method, Impulse voltage, Measurements using voltage dividers, Measurement of high D.C, A.C and Impulse currents.

Unit V

Testing of power capacitors, testing of power transformers, testing of circuit breaker, Test voltages, voltage and power ratings of test equipment, Layout of high voltage laboratories. Lightning phenomena and Line design.

Suggested Reading:

1. M.S. Naidu and V. Kamaraju, High Voltage Engineering, Tata McGraw Hill, 2001
2. C.L. Wadhwa, High Voltage Engineering, Wiley Eastern Ltd., 1994
3. E. Kuffel and W. S Zaengl, High Voltage, Engineering, Pergamon Press, 1984

EE 454

ADVANCED CONTROL SYSTEMS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT I

Review of State-space representation of continuous time systems and their solution, State models for discrete time systems described as difference equations and transfer functions, Transfer function from State model, State-transition matrix and solution of State equations for discrete time systems.

UNIT II

Controllability and Observability: Concepts of Controllability and Observability, Controllability tests for continuous-time, discrete-time, time-invariant systems. Observability tests for continuous-time, discrete-time and time-invariant systems, and Controllability and Observability modes in State. Jordon's canonical form, Controllable and Observable companion forms for single in- put single output systems, Pole placement by State feedback.

UNIT III

Nonlinear systems: Behaviour of non-linear systems, Jump resonance, Sub- I harmonic oscillation, Limit cycles, Common physical non-Linearities, Singular points, Phase plane- method, Construction of phase plane trajectories, Isocline method, Delta method, Computation of time.

UNIT IV

Stability: Lyapunov's stability criteria, Theorems, Direct method of Liapunov for linear systems, Methods of constructing Liapunov function, Krasovski's method, Variable gradient method.

UNIT V

Optimal Control: Formulation of optimal control problem, Calculus of variations, Minimization of functionals. Formulation of variational calculus using Hamiltonian method.

Suggested Reading:

1. Gopal. M., Modern Control System Theory, Wiley Eastern Limited, 2004
2. Schulz D.G., Melsa J.L., State Functions of Linear Control Systems, McGrawHill.

EE 455

OPTIMIZATION METHODS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT I

Introduction to classical optimization techniques: Statement of optimization problem, Objective function, Classification of optimization problems.
Classical optimization techniques: Single-variable and Multi-variable optimization without constraints. Multi-variable optimization with equality constraints. Lagrange multiplier method, Multi-variable optimization with inequality constraints, Kuhn- Tucker conditions.

UNIT II

Linear Programming: Standard form, Formulation of the LPP, Solution of simultaneous equations by Pivotal condensation, Graphical method, Simplex algorithm, Big M method, Two phase Simplex method, Duality principle, Dual Simplex method.

UNIT III

Non-Linear Programming:
One dimensional Search method: Fibonacci method, Golden Section method. Direct Search method: Univariate Search and Pattern Search methods, Powell's method.

UNIT IV

Gradient method: Steepest Descent, Conjugate Gradient and Quasi-Newton method, Fletcher-Reeves method of Conjugate gradients

UNIT V

Dynamic Programming: Multistage design process, Types, Principle of optimality, Computational procedure in Dynamic programming, Examples using Calculus method and Tabular method of solutions

Suggested Reading:

1. S.S.Rao, Engineering Optimization Theory and Applications, New Age International, 3rd Edition, 1998.
2. Jasbir S.Arora, Introduction to Optimum Design, McGraw Hill International Edition, 1989
3. S.D.Sharma, Operational Research, Kedarnath Ramnath & Co., 2004

EE 456

RENEWABLE ENERGY SOURCES

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT I

Statistics on conventional energy sources and supply in developing countries. Definition, Concepts of NCES, Limitations of RES, Criteria for assessing the potential of NCES, Classification of NCES, Solar, Wind, Geothermal, Biomass, Ocean energy sources, Comparison of these energy sources.

UNIT II

Solar Energy: Definition, Energy available from Sun, Solar radiation data, Solar energy conversion into heat, Flat plate and Concentrating collectors, Principle of natural and forced convection, Solar Engines: Stirling, Brayton engines, Photovoltiacs: p-n junctions, Solar cells, PV systems, Standalone, Grid connected solar power satellite, Calculation of energy through photovol- taic power generation.

UNIT III

Wind Energy: Energy available from wind, General formula, Lift and drag, , Basis of wind energy conversion, Effect of density, Frequency variances,
Angle of attack, Wind speed, Windmill rotors, Horizontal axis and Vertical axis rotors, Determination of torque coefficient, Induction type generators, and Working principle of wind power plant.

UNIT IV

Nature of Geothermal sources: Definition and classification of resources, Utilization for electricity generation and direct heating, Wellhead power generating units, Basic features: Atmospheric exhaust and condensing, Exhaust types of conventional steam turbines. Pyrolysis of Biomass to produce solid, liquid and gaseous fuels. Biomass gasification, Constructional details of gasifier, Usage of biogas for chullas, various types of chullas for rural energy needs.

UNIT V

Wave, Tidal and OTEC energy, Difference between tidal and wave power generation, Principles of tidal and wave power generation, OTEC power plants, operation of small open-cycle experimental facility, Design of 5 MW OTEC pro-commercial plant. Economics of OTEC, Environmental impacts of OTEC, Status of multiple products OTEC systems.

Suggested Reading:

1. Ashok Desai V, Non-Conventional Energy, Wiley Eastern Ltd, 1990
2. Mittal K.M, Non-Conventional Energy Systems, Wheeler Publishing Go. Ltd, 1997
3. Ramesh R, Kumar K.U, Renewable Energy Technologies, Narosa Publishing House, New Delhi,
1997

LA 454

INTELLECTUAL PROPERTY RIGHTS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

Unit –I

Introduction: Meaning of Intellectual Property- Nature of I.P- Protection of I.P. Rights-kinds of Intellectual Property Rights –International Conventions of Intellectual Property Rights- patent Treaty 1970, GATT 1994, TRIPS & TRIMS – International Organization for Protection of IPR – WTO, WIPRO, UNESCO.

Unit –II

Patents: Meaning of Patent- Commercial Significance – Obtaining of Patent – patentable Subject – matter – rights and obligations of Patentee – specification – Registration of patents – Compulsory licensing and licenses of rights – Revocation.

Unit –III

Industrial Designs: Definitions of Designs – Registration of Designs – Rights and Duties of Proprietor of Design – Piracy of Registered Designs.

Unit –IV

Trade Marks: Meaning of trademark – purpose of protecting trademarks Registered trade mark – procedure – passing off – Assignment and licensing of trade marks – Infringement of trademarks.

Unit – V

Nature, scope of copyright – Subject matter of copy right – Right conferred by copyright- Publication – Broad – casting, telecasting – computer programme – Database right – Assignment – Transmission of copyright – Infringement of copy right.

Suggested Reading:

1. Cornish W.R, "Intellectual Property Patents ", Copyright, Trademarks and Allied Rights, Sweet & Maxwell 1993.
2. P. Narayanan, "Intellectual Property Law ", Eastern law House 2nd Edn. 1997.
3. Robin Jacob & Daniel Alexander, " A Guide Book to Intellectual Property Patents, Trademarks, Copy rights and designs, Sweet and Maxwell, 4th Edn.,1993

EE 460

RELIABILITY ENGINEERING

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT I

Discrete and Continuous random variables. Probability density function and Cumulative distribution function, Mean and variance. Binomial, Poisson, Normal, Exponential and Weibull distributions.

UNIT II
Failure and causes of failure, Failure rate and failure density, Reliability function and MTTF. Bath-tub curve for different systems. Parametric methods for above distributions, Non -parametric methods from field data.

UNIT III
Reliability block diagram, Series and parallel systems, Network reduction technique, Examples, Evaluation of failure rate, MTTF and reliability, Active and Standby Redundancy, r out of n configuration, Non Series -parallel systems, Tie-set and cut-set methods.

UNIT IV
Availability, MTTR and MTBF, Markov mode-ls and State transition matrices. Reliability models for single component, two component, load sharing and standby systems. Reliability and availability models of two unit parallel sys- tem with repair and standby system with repair. Repairable Systems. Maintainability. Preventive maintenance. Evaluation of reliability and MTTF. Over- haul and replacement. Optimum maintenance policy.

UNIT V
Importance of power system reliability, Outage definitions. Markov model of a generating plant with identical units and un-identical units. Capacity-out- age probability table. Frequency of failures and Cumulative frequency.

Suggested Reading:

1. Charles E. Ebeling, Reliability and Maintainability Engg. McGraw Hill International Edition,1997
2. Balaguruswamy, Reliability Engineering, Tata McGraw Hill Publishing Company Ltd., 1984
4. Endrenyi, Reliability Modeling in Electric Power Systems, John Wiley & Sons, 1978

EE 458

ELECTRONIC INSTRUMENTATION SYSTEM

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

Unit I

Analog and Digital Measuring Systems: Interfacing Active and Passive Transducers. Amplifiers: Instrumentation amplifiers (Fixed and Programmable gain types and its specifications), Isolation amplifiers (Types and its specifications).
Digital to Analog Converters: R-2R ladder and Inverted ladder DACs. Main DAC specifications. Analog to Digital Converter: R-2R ladder and Inverted ladder DACs, Main DAC specifications, Analog to Digital Converters: Parallel (or Flash) ADC successive approximation, ADC Microprocessor compatibility, Dual slope ADC, Principal specifications of an ADC

Unit II

Digital Voltmeters and Multimeters: Simple D.C Voltage attenuator, Current to Voltage converter, Resistance to Voltage converter, Automatic ranging and Automatic zeroing RMS detector in DMM and RMS and True RMS, Digital Frequency and Time measurements, Frequency measurements, frequency ratio time interval and pulse width measurements, Scaling and Checking modes. Counting errors, Input signal conditioning. Trigger level, Hysteresis.

Unit III

Signal Analysis: Wave Analyzers: Signal analysis and wave analyzer: Type and applications. Harmonic Distortion Analyzers: harmonic Distortion, heterodyne Harmonic Analyzer or Wave meter, Tuned circuit, Fundamental Suppression. Spectrum Analysis: Block Diagram, Phase locked circuit for the first local oscillator, successive Limiting type of Log IF amplifier.

Unit IV
Computer controlled Test Systems: Testing an Audio amplifier, Radio Receiver instruments used in Computer controlled instrumentation, Frequency counter, synthesized signal generator interfaced with IEEE 488 Bus, Relay switched attenuator, IEEE 488 Electrical Interface.

Unit V

Cathode ray Oscilloscope: Block Diagram, Basic concepts, Vertical amplifier, Time base, Trigger Delay line and their role in a CRO, Digital storage Oscilloscope, Magnetic Recorders, Digital Interface for Programmable Instrumentation, Description and Sample examples of Automatic Instrumentation.

Suggested Reading:

1. A.J. Owens, Digital Instrumentation, McGraw Hill International Edition, 1995
2. H.S. Kalsi, Electronic Instrumentation, Tata McGraw Hill
3. Hlfrick and Cooper, Modern Electronic Instrumentation and Measurement Techniques, Prentice Hall of India, 2002
4. Tran Tien Lang, Electronic Measuring Systems, John Wiley and Sons, 1987

CS 412

IMAGE PROCESSING

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks

Sessional 25 Marks

Unit – I

Image formation & description: Digital image representation- Elements of visual perception. Sampling & Quantization. Elements of digital image processing systems.

Unit – II

Image transforms: Digital Image transforms-Fourier transform, Extension to 2D, DCT, Walsh, Hadamard transforms.

Unit – III

Image enhancements & segmentation: Histogram modification. Image smoothing-Image sharpening. Thresholding. Edge detection. Segmentation. Point and region dependent techniques.

Unit – IV

Image encoding: Fidelity criteria. Transform compression. KL. Fourier, DCT, Spatial compression. Run length coding. Huffman coding. Contour coding.

Unit – V

Restoration: Restoration models. Inverse filtering. Least squares Filtering. Recursive filtering.

Suggested Reading:

1. Gonzalez R.C Woods R.E: Digital Image Processing, Addison Wesley, 1992
2. Rosenfeld A, Kak AC: Digital Picture Processing Vol. I & II, Acad. Press, 2nd edition, 1982.

CS 460

INTERNET PROGRAMMING

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks

Unit-I

Introduction to Internet and Intranet HTTP protocol. TCP/IP -Concepts, addressing routing, web application building blocks, HTML, CGI, Integrating ODBC and CGI.

Unit-II

Java programming -Overview of Java, Data types, Variables, Arrays, Operators, Control structures, Classes, Inheritance, packages and interface.

Unit-III

Java programming -Exception handling, multithreaded programming, I/O, Applets Networking, AWT, AWT Controls.

Unit-IV

Internet Concepts -Cross -Platform client browser setup, corporate information models, structuring company information resources, document management, workflow software, groupware, case studies.

Unit- V

Information servers -DNS, Mail Servers, News Servers, Chat, FTP Servers, proxy servers, security and firewalls, search engines.

Suggested Reading:

1. John Desborough, "Intranet Web Development", New Riders Publ. 1996.
2. Partrik Naughton, Robert Schildt. "The complete reference Java", Tata - McGraw Hill., 1997

CS472

NEURAL NETWORKS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT -I

INTRODUCTION.
Knowledge- based information processing., A general view of Knowledge based algorithm. Neural Information processing. Hybrid Intelligence. Artificial Neuron.

UNIT -II
Basic Neural Computation Models:
Basic concepts of Neural Networks -Network properties, Node properties. sigmoid functions. System dynamics, Inference and learning algorithm. Data representation.
Functional classification models -single layer perceptions.
Multi layer perceptions.

UNIT –III
Learning: Supervised and unsupervised statistical learning. Al learning.

Neural Network Learning -Back.
Propagation algorithm and derivation. Stopping criteria. Complexity of Learning Generalization.

UNIT -IV
Self-organizing Networks:
Introduction, The Kohonen algorithm. Weight initialization, weight training, associative memories, bi-directional associative memories.

UNIT-V
Hopfield Networks:
Introduction. The Hopfield model, Hopfield network algorithm. Boltzman's machine algorithm. Neural Network applications.

Suggested Reading:

1. Limin Fu: Neural Networks in Computer intelligence. Tata McGraw Hill, 2003.
2. Simon Haykin: "Networks Networks -A Comprehensive Foundation", Pearson Education, 2nd Edition, 2001.
3. Bart Kosko: Neural Networks and Fuzzy systems, Prentice Hall of India, 1994.
4. James A. Freeman: Simulating Neural Networks, Addison Wesley Pub, 1995

EE 481

POWER SYSTEM LAB

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

List of Experiments:

1. Determination of regulation and efficiency of Short, Medium and Long transmission lines
2. IDMT characteristics of Over-current relay & Study of Bucholz relay.
3. Determination of A, B, C, D constants of Short, Medium and Long lines. Drawing of circle diagrams.
4. Differential protection of transformer.
5. Sequence impedance of 3-Phase Alternators
6. Determination of positive, negative and zero-sequence reactance of 3-phase transformers using sequence current excitation/fault calculation
7. Synchronous machine reactance and time constant from 3-phase S.C test

8. Characteristics of Static relays.
9. Static excitation of Synchronous Generator.
10. Determination of dielectric strength of oils and study of Megger
11. Parallel operation of Alternators.
12. Measurement of capacitance of 3-core cables.
13. Fault location of Underground cables.
14. Simulation of string of insulators for determination of Voltage distribution and String efficiency.

At lest ten experiments should be completed in the semester.

EE 482

PROJECT

Instruction	6 Periods per week
Duration of University Examination	Viva voce
University Examination	Grade*
Sessional	50 Marks

Solving a real life problem should be the focus of U.G projects. Faculty members' should propose the projects brief (scope and references) well in advance which should be made available to the students through department library. The project could be classified as Hardware, Software, Modeling, Simulation etc., It should involve one or many elements of techniques such as Analysis, Design and Synthesis. The Department will appoint a Project coordinator who will coordinate the following

- Grouping of students (Max. 3 in group)
- Allotment of Projects and Project Guides
- Project monitoring at regular intervals

All Projects allotment will be completed by the 4^{th} week of the 4the year I semester, so that students get sufficient time for completion of the project.

All Projects will be monitored Atleast twice in a semester through students presentation. Sessional marks should be based on the grading/marks awarded by monitoring committee of faculty members and marks given by the supervisers.

Effort should be made that some of the projects are carried out in industries with the help of industry co-coordinators. Problems can also be invited from the industries to be worked out through UG projects.

Common norms will be established for final documentation of the project report by the respective departments.

*Excellent/Good/Satisfactory/Unsatisfactory

Note: 3 periods of contact load will be assigned to each project guide.

EE 483

SEMINAR

Instruction	3 Periods per week
Sessional	25 Marks

Oral presentation is an important aspect of engineering education. The objective of the seminar is to prepare the student for a systematic and independent study of the state of the art topics in a broad area of his/her specialization.

Seminar topics may be chosen by the students with advice from the faculty members. Students are to be exposed to the following aspects of a seminar presentation.

- Literature Survey
- Organization of the material
- Presentation of OHP slides/PC presentation
- Technical writing

Each student is required to:

1. Submit a one page synopsis before the seminar talk for display on the notice board
2. Give a 20 minutes presentation through OHP, PC, Slide projector followed by a 10 minute discussion.
3. Submit a report on the seminar topic with a list of reference and slides used.

Seminars are to be scheduled from the 3rd week to the last week of semester and any change in schedule should be discouraged.

For award of Sessional marks students are to be judged by at least two faculty members on the basis of an oral and written presentation as well as their involvement in the discussions

EE 484

ELECTRICAL ENGINEERING COMPUTER SIMULATION LAB

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

Simulation experiments should be conducted in the following areas using MATLAB /Simulink with DSP Tool Box & Control System Tool Box/ PSpice / MiPower /SABER /Labview etc.

1. Verification of Network theorems (i) Thevinin's theorem (ii) superposition theorem (iii) Maximum power transfer theorem

2. Transient responses of Series RLC, RL and RC circuits with Sine and Step inputs.

3. Series and Parallel resonance.

4. Bode plot, Root-Locus plot and Nyquist plot.

5. Transfer function analysis (i) Time response for Step input (ii) Frequency response forSinusoidal input.

6. Design of Lag, Lead and Lag-Lead compensators.

7. Design & Simulation of Pressure Monitoring System Using Lab View

8. Simulation of Tank Level Control System Using Lab View

9. Analysis of an ECG Waveform Using Lab View

10. Design of Temperature Monitoring System Using Lab View
11. Simulation of Transmission & Reception of Digital Data Using Lab View