# E.G.S. PILLAY ENGINEERING COLLEGE

**(Autonomous)**

Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai

Accredited by NAAC with 'A'Grade | Accredited by NBA

NAGAPATTINAM – 611002

## B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

**Full Time Curriculum and Syllabus**

**Second Year – Third Semester**

| Course Code | Course Name | L | T | P | C | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | CA | ES | Total |
| **Theory Course** | | | | | | | | |
| 1701MA301 | Engineering Mathematics-III | 3 | 2 | 0 | 4 | 40 | 60 | 100 |
| 1702EE301 | Electron Devices and Circuits | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 1702EE302 | Digital Electronics | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 1702EE303 | Electromagnetic Theory | 3 | 2 | 0 | 4 | 40 | 60 | 100 |
| 1702EE304 | Power Plant Engineering | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 1702EE305 | Electrical Machinery-I | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| **Laboratory Course** | | | | | | | | |
| 1702EE351 | Electrical Machinery Laboratory-I | 0 | 0 | 4 | 2 | 50 | 50 | 100 |
| 1702EE352 | Electron Devices and Circuits Laboratory | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 1704EE353 | Technical Seminar I | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 1704GE351 | Life Skills: Soft Skills | 0 | 0 | 2 | 1 | 100 | 0 | 100 |

**L – Lecture | T – Tutorial | P – Practical | C – Credit | CA – Continuous Assessment | ES – End Semester**

| 1701MA301 | ENGINEERING MATHEMATICS III (Common to B.E - Civil, CSE, EEE, Mech B.Tech- IT Degree Programmes ) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 2 | 0 | 4 |

**PREREQUISITE :**

1. Engineering Mathematics I
2. Engineering Mathematics II

**COURSE OBJECTIVES:**

1. To introduce Fourier series analysis and applications in Engineering, apart from its use in Solving boundary value problems.
2. To acquaint the student with Fourier transform techniques used in wide variety of situations.
3. To introduce the effective mathematical tools for the solutions of partial differential equations that model several physical processes and to develop Z transform techniques for discrete time Systems.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Use Fourier series analysis which is central to many applications in engineering(K3)
CO2 Apply Fourier transform techniques used in wide variety of situations(K3)
CO3 Compute the solution of partial differential equations(K3)
CO4 Solve boundary value problem using partial differential equation(K3)
CO5 Apply Z transform techniques for discrete time systems(K3)

**UNIT I FOURIER SERIES** **12 Hours**

Dirichlet‘s conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Perceval’s identity – Harmonic analysis – Simple Applications

**UNIT II FOURIER TRANSFORMS** **12 Hours**

Statement of Fourier integral theorem – Fourier transform pair – Fourier sine and cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval’s identity

**UNIT III PARTIAL DIFFERENTIAL EQUATIONS** **12 Hours**

Formation of partial differential equations – Singular integrals — Solutions of standard types of first order partial differential equations – Lagrange‘s linear equation — Linear partial differential equations of second order with constant coefficients of homogeneous type- Applications

**UNIT IV APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS** **12 Hours**

Classification of PDE – Solutions of one dimensional wave equation – One dimensional equation of heat Conduction – Steady state solution of two-dimensional equation of heat conduction.

**UNIT V Z – TRANSFORMS AND DIFFERENCE EQUATIONS** **12 Hours**

Z - Transforms – Elementary properties – Inverse Z – transform (using partial fraction and residues) – Convolution theorem – Formation of difference equations – Solution of difference equations using Z – transform.

**TOTAL: 60 HOURS**

**FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :**

1. Linear Algebra
2. Numerical Solution of non-homogeneous partial differentialequations

**REFERENCES:**

1. Veerarajan. T., ‐Transforms and Partial Differential Equations‖, Second reprint, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2012
2. Grewal. B.S., ‐HigherEngineering Mathematics‖, 42ndEdition, KhannaPublishers,Delhi, 2012.
3. Bali.N.P and Manish Goyal, ―A Textbook of Engineering Mathematics‖, 7th Edition, Laxmi Publications Pvt. Ltd , 2007
4. Ramana.B.V., ‐Higher Engineering Mathematics‖, Tata McGrawHill Publishing Company Limited, New Delhi, 2008.
5. Narayanan.S., Manicavachagom Pillay.T.K and Ramanaiah.G ‐Advanced Mathematics for Engineering Students‖ Vol. II & III, S.Viswanathan Publishers Pvt. Ltd. 1998.
6.www.nptelvideos.in/2012/11/mathematics-iii.html

**1702EE301 ELECTRON DEVICES AND CIRCUITS L T P C**
**3 0 0 3**

**PREREQUISITE:**

1. Semiconductor Physics and Devices
2. Electric Circuit Analysis

**COURSE OBJECTIVES:**

1. To understand the structure and operation of electronic devices
2. To explain the operation and characteristics of electronic circuits
3. To analyze the BJT and FET based amplifier circuits

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1: Explain the structure, operation and V-I Characteristics of Diodes(K2).
CO2: Describe the V-I characteristics of BJT in CB,CE & CC configurations also able to design and analyze amplifier circuits containing BJT as a device (K2).
CO3: Discuss the structure, operation and V-I characteristics of FET also able to design and analyze amplifier circuits containing FET as a device. (K2).
CO4: Explain the need and operation of differential amplifiers, single tuned amplifiers and power amplifiers able to analyze differential and single tuned amplifiers. (K2)
CO5: Analyze negative feedback amplifiers to determine necessary expressions & RC, LC and Crystal Oscillators to find out frequency of oscillations(K2)

**UNIT I DIODES 9 Hours**

**PN Junction Diode** – structure, operation and V-I characteristics; capacitance effect – diffusion capacitance and transition capacitance; diode model; operation of clippers & clampers.
**Zener Diode** – V-I Characteristics, breakdown mechanism; application – voltage regulator.
**Special Function Devices** – Structure and operation of LED, Laser diode, Tunnel diode, Schottky diode and Photodiode.

**UNIT II BIPOLAR JUNCTION TRANSISTOR CIRCUITS 9 Hours**

BJT – Structure, operation, V-I characteristics of common base, common emitter and common collector configurations; DC and AC load line analysis; determination of Q point; biasing circuits; small signal model – analysis of CB, CE and CC amplifiers; low and high frequency response of an amplifier; Darlington Amplifier and thermal run away/ secondary breakdown.

**UNIT III FIELD EFFECT TRANSISTOR CIRCUITS 9 Hours**

**JFET** – Structure, operation – n channel and p channel, V-I characteristics and biasing circuits of JFET. **MOSFET** – Structure and operation of D-MOSFET & E-MOSFET, V-I characteristics, biasing circuits, small signal mode – analysis of common source and common drain amplifier, high frequency equivalent circuit;
Comparison of devices.

**UNIT IV DIFFERENTIAL AND POWER AMPLIFIERS 9 Hours**

**Differential Amplifier** – Common mode and difference mode analysis of BJT based differential amplifier.
**Single Tuned Amplifiers** – Gain and frequency response of single tuned BJT and FET amplifier; neutralization methods.
**Power Amplifiers** – Class A, class B, class C and class AB Amplifiers (Qualitative analysis).

**UNIT V FEEDBACK AMPLIFIERS AND OSCILLATORS 9 Hours**

**Negative Feedback** – Voltage series, current series, current shunt and voltage shunt amplifiers – Input impedance, output impedance, current gain, voltage gain, overall current gain and overall voltage gain.
**Positive Feedback** – Barkhausen criterion; RC oscillators – RC phase shift and Wien bridge oscillators; LC oscillators – Hartley, Colpitts and Clapp; Crystal oscillators – Miller and Pierce crystal oscillators.

**FURTHER READING / CONTENT BEYOND SYLABUS / SEMINAR : TOTAL: 45 HOURS**

1. Multistage Amplifiers
2. Design of Multi vibrators using BJT

**REFERENCES:**

1. Milman, Halkias and satyabrata Jit, ―Electronic Devices and Circuits‖ 4th Edition, McGraw Hill Pvt. Ltd., 2015.
2. Robert L. Boylestad and Louis Nashelsky, Electronic Devices and Circuit Theory‖, 11th Edition, PHI Ltd., 2015.
3. David A. Bell, ―Electronic Devices and Circuits‖, 5th Edition, Oxford University Press, 2008.
4. Thomas L. Floyd, ―Electronic Devices‖, 10th Edition, An Imprint of Mc Millan publishing company, 2017.
5. Prof. A. N. Chandorkar., IIT Bombay online lecture series on Analog Electronics ttp://nptel.ac.in/courses/117101106/
6.Prof.S.Karmalkar,IIT Madras, online lecture series on Solid State Devices http://nptel.ac.in/courses/117106091/
7.https://onlinecourses.nptel.ac.in/noc18_ee32/preview

**1702EE302 DIGITAL ELECTRONICS L T P C**
**3 0 0 3**

**PREREQUISITE :**

1. Applied Physics for Engineers
2. Electric Circuit Analysis

**COURSE OBJECTIVES:**

1. To study the fundamentals of digital systems, programmable logic devices and logic families.
2. To design and analyze digital systems.
3. To apply the digital simulation techniques for application oriented digital circuits.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Solve digital system problems using number systems, binary codes, logic gates and Boolean algebra(K3)
CO2 Apply Boolean laws and Karnaugh map to reduce the switching functions(K3)
CO3 Construct combinational logic circuits using logic gates and multiplexers(K3)
CO4 Build synchronous sequential logic circuits using excitation table, stable table and state diagrams(K3)
CO5 Construct asynchronous sequential logic circuits using flow table, transition table, state assignment and state reduction techniques (K3)
CO6 Implement Boolean functions and combinational logic circuits using memories, programmable logic devices and logic families (K3).

**UNIT I NUMBER SYSTEM AND BOOLEAN ALGEBRA 9 Hours**

Review of number system, Types and conversion codes , BCD, Gray code, Excess 3 code; Error detection and correction codes – Parity ,Hamming codes; Boolean algebra – De Morgan's theorem ,switching functions and Simplification using K-maps.

**UNIT II COMBINATIONAL CIRCUITS 9 Hours**

Design using logic gates – Design of adders, subtractors, comparators; code converters – encoders, decoders; Multiplexers and de-multiplexers– Function realization using multiplexers; Booth multiplier and Array Multiplier.

**UNIT III SYNCHRONOUS SEQUENTIAL CIRCUITS 9 Hours**

Flip flops – SR, JK, Master Slave JK and D flip flop, T flip flop; Analysis of synchronous sequential circuits – Design of synchronous sequential circuits, Counters; state diagram – state reduction – state assignment.

**Unit IV ASYNCHRONOUS SEQUENTIAL CIRCUITS 9 Hours**

Analysis of asynchronous sequential machines – State assignment, Asynchronous design problem.

**UNIT V MEMORY DEVICES, PROGRAMMABLE LOGIC DEVICES AND LOGIC FAMILIES 9 Hours**

Memories – ROM, PROM, EPROM ; Programmable Logic Devices – PLA, PAL, PLD ; Logic families: TTL, ECL, CMOS; Case study on four-bit accumulator.

**TOTAL: 45 HOURS**

**FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR:**

1. Introduction to VHDL programming
2. Hazards in Asynchronous sequential circuits

**REFERENCES:**

1. M. Morris Mano, ―Digital Logic and Computer Design‖, Prentice Hall of India, 4th edition, 2013.
2. A.Anand kumar, ―Fundamentals of digital circuits‖, 3rd Edition, PHI Learnings Pvt. Ltd, 2014.
3. Malvino and Leach, Digital Principles and Applications, Tata McGraw Hill, New Delhi, 7th edition, 2011.
4. Floyd, Digital Fundamentals, Pearson Education, 10th edition, 2011.
5. John F.Wakerly, Digital Design Principles and Practice, Pearson Education, 4th edition, 2008.
6.http://nptel.ac.in/courses/117106086/

**1702EE303 ELECTROMAGNETIC THEORY L T P C**
**3 2 0 4**

**PREREQUISITE :**

1. Vector Calculus.
2. Electric Circuit Analysis.

**COURSE OBJECTIVES:**

1. Understand the concepts of vectorcalculus
2. Understand the principles of electric and magneticfields
3. Comprehend the concepts of electromagneticwaves

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Explain the basics of electromagnetism, gauss law, coulomb's law, ampere law and thermos of divergence, stokes and pointing.(K2)

CO2 Make use of vector, gradient, divergence, curl in electrostatics and magneto statics. (K3)

CO3 Correlate gauss law, coulomb is law for calculating the charges, forces, field intensity and flux density for a finite, infinite, circular line and boundary condition in an electric field.(K3)

CO4 Correlate gauss law, coulomb's law for calculating the charges, forces, field intensity and flux density or a finite, infinite, circular line and boundary condition in a magnetic field.(K3)

CO5 Determine the Maxwell's equation, wave equation for a time varying field. (K2)

**UNIT I INTRODUCTION TO VECTOR CALCULUS 12 Hours**

Introduction- scalar and vector fields; different coordinate systems-Cartesian, cylindrical ,spherical coordinate system; divergence theorem; Stroke's theorem; Coulomb's law, Gauss law and its applications.

**UNIT II STATIC ELECTRIC FIELDS 12 Hours**

Electric field intensity-field due to different types of charges, electric flux density; electric potential due to uniformly charged infinite line, electric potential due to charged circular disc; potential gradient, dipole, field due to dipole; energy density in electrostatic field; electric boundary conditions (between two perfect dielectric and between free space and conductor), capacitance-concept of capacitance, capacitance of two dielectric media and three dielectricmedia.

**UNIT III MAGNETOSTATICS 12 Hours**

Biot-savart law- applications (infinite and finite long straight conductor, circular loop); Ampere circuital law-applications (infinite long straight conductor, coaxial cable); curl of magnetic field intensity; magnetic flux and magnetic flux density; scalar and vector magnetic potentials; magnetic boundary conditions (between two Perfect dielectric and between free space and conductor).

**UNIT IV FORCE, TORQUE AND INDUCTANCE 12 Hours**

Lorentz force equation; force between differential current elements; force and torque on a closed circuit; the nature of magnetic materials; magnetization and permeability; self-inductance and mutual inductance-solenoid, Toroid.

**UNIT V MAXWELLS EQUATIONS AND TIME VARYING FIELDS 12 Hours**

Maxwell's equations for steady fields in point form and integral form; Faraday's law; displacement current; Maxwell's equations in point form and integral form for time-varying field's; comparison of field theory and circuit theory; Poynting theorem, Poynting vector.

**TOTAL: 60 HOURS**

**FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :**

1. A Seminar on wave propagations in free space, in a conducting medium, dielectric mediums
2. A report on EMI study in home appliances

**REFERENCES:**

1. William H.Hayt, _Engineering Electromagnetics', Tata McGraw Hill, 2005.
2. Mathew N. O. SADIKU, Elements of Electromagnetics', Oxford University press Inc., seventh edition, 2018.
3. Joseph. A.Edminister, _Theory and Problems of Electromagnetics', Second edition, Schaum Series, Tata McGraw Hill, 1995.
4. AshutoshPramanik, _Electromagnetism – Theory and Applications', Prentice-Hall of India Private Limited, New Delhi, 2006.
5. Kraus and Fleish, _Electromagnetic with Applications', McGraw Hill International Editions, Fifth Edition, 1999.
6. https://onlinecourses.nptel.ac.in/noc18_ee04/preview

**1702EE304 POWER PLANT ENGINEERING**

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 3 |

**PREREQUISITE :**

1. Basic Mechanical Engineering
2. Applied Chemistry

**COURSE OBJECTIVES:**

1. To have a detailed knowledge about energy sources available and their management.
2. To understand layout of various power plants and the function of various components of the Power plant.
3. To become familiar with operation of various power plants.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Understand the construction and operation of Thermal power plants.(K2)
CO2 Select the suitable turbine for hydro power plants. (K2)
CO3 Identify the required turbine, site for diesel and gas power plant. (K2)
CO4 Explain the reactor operation and selection of site in Nuclear power plant. (K2)
CO5 Describe the power generation from various renewable resources. (K2)

**UNIT I COAL BASED THERMAL POWER PLANTS 9 Hours**

Layout of modern coal power plant; types of boiler; super critical boilers, FBC boilers; Turbines; condensers; steam and heat rate; subsystems of thermal power plants – fuel and ash handling, draught system, feed water Treatment; Energy Scenario – National, international context.

**UNIT II HYDRO POWER PLANTS 9 Hours**

Introduction to hydro power plant – layout of dams; types, selection of water turbine, advantages and Disadvantages; selection of site for hydro power plant; pumped storage hydro power plant.

**UNIT III DIESEL AND GAS POWER PLANTS 9 Hours**

Types, open and closed cycle gas turbine, work output & thermal efficiency; inter cooling – regeneration - Advantages and disadvantages; Diesel engine power plant - component and layout.

**UNIT IV NUCLEAR POWER PLANTS 9 Hours**

Basics of nuclear energy - layout and subsystems of nuclear power plants, nuclear fission and fusion; types of reactor, working of nuclear reactors, boiling water reactor (BWR), pressurized water reactor(PWR), Canada deuterium- uranium reactor (CANDU), breeder, gas cooled reactors; safety measures for nuclear power plants.

**UNIT V POWER FROM RENEWABLE ENERGY 9 Hours**

Typical layout and associated components including turbines; Principle; Construction and working of wind, tidal, solar photo voltaic, solar thermal, geo thermal, biogas.

**TOTAL: 45 HOURS**

**FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :**

1. MHD/OTEC power plants
2. New and alternate energy sources

**REFERENCES:**

1. P.K. Nag, –PowerPlantEngineering,Tata McGraw-HillPublishing CompanyLtd., Third Edition, 2014.
2. M.M. El-Wakil, –PowerPlantTechnology‖, Tata McGraw-HillPublishing CompanyLtd., 2010.
3. Black &Veatch,–PowerPlantEngineering‖Springer, 1996.
4. Thomas C. Elliott, Kao Chen and Robert C. Swanekamp, ―Standard Handbook of Power Plant Engineering‖ Third Edition, McGraw-Hill, 2004.
5. Godfrey Boyle, ―Renewable energy‖ Oxford University Press in association with the Open University, 2004.

| 1702EE305 | ELECTRICAL MACHINERY - 1 | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**PREREQUISITE :**

1. Electric Circuit Analysis
2. Basic Electrical Engineering

**COURSE OBJECTIVES:**

1. Understand the basic concepts behind the rotating and stationary machines.
2. Evaluate the performance characteristics of DC Generator and DC Motor
3. Explain the different types of Transformers, their working principle and performance

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Understand the operation characteristics of DC machines(K2)
CO2 Understand the operation characteristics of Transformer(K2)
CO3 Analyze the performance parameters of DC machine and Transformer(K3)
CO4 Elucidate the applications of transformer(K3)
CO5 Apply the different testing methods to assess the performance of Electrical machines(K3)

**UNIT I INTRODUCTION TO MACHINERY CONCEPTS 9 Hours**

Magnetic circuits; flux; Inductance; Dynamically and Statically induced EMF; Properties of Magnetic materials;Lossesinmagneticmaterials,ACoperationofmagneticmaterials;PrinciplesofElectromechanical Energy conversion - Energy conversion through magnetic field and electric field.

**UNIT II DC GENERATOR 9 Hours**

Principle, Construction and Working of DC generator; EMF equation; Classification; Armature reaction; Commutation; Compensating winding; Generator characteristics.

**UNIT III DC MOTOR 9 Hours**

Principle of operation; Back EMF of DC motors; Classification; Torque equation; Speed-torque characteristics; Winding diagram; Motor starters; Braking methods; Introduction to permanent magnet DC motor.

**UNIT IV TRANSFORMER 9 Hours**

Transformer-Principle, construction, Ideal transformer, Equivalent circuit, Phasor diagram, Parallel operation of Transformers; Three phase transformer connections-Tertiary winding; Voltage regulation; Inrush current; Per unit representation; Autotransformer.

**UNIT V TESTING & APPLICATIONS OF ELECTRICAL MACHINES 9 Hours**

Efficiency and Losses in Electrical machines; DC motor testing- Swinburne‘s test, Brake test, Hopkinson test- Transformer testing- Sumpner‘s test, Polarity test; Selection of DC Motors; Applications of DC motors; Applications of transformers.

**TOTAL: 45 HOURS**

**FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :**

1. DC motors in everyday life.
2. Applications of transformer in home and industries.

**REFERENCES:**

1. D. P. Kothari and I. J. Nagrath, Electric Machines, Tata McGraw Hill Publishing Company Ltd, 2010.
2. Edward Hughes, Electrical and Electronic Technology, 12th edition, Pearson, 2016.
3. P. S. Bimbhra, Electrical Machinery, Khanna Publishers, 7th edition, 2011.
4. B. L. Theraja and A. K. Theraja, ―Text Book of Electrical Technology: AC & DC Machines (Volume- 2)‖, S.Chand & Company Ltd., New Delhi, 2008.
5. M.N.Bandyopadhyay, Electrical Machines Theory and practice, PHI Learning Pvt. Ltd, New Delhi 2007.
6. Electrical Machines-I Nptel lecture video by Dr. D.Kastha, IIT Kharagpur

| 1702EE351 | ELECTRICAL MACHINERY LABORATORY - 1 | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 4 | 2 |

**PREREQUISITE :**

1. Study of Electrical circuits
2. Basics of rotating and static machinery concepts

**COURSE OBJECTIVES:**

1. Complete the circuit to test a given electrical machine.
2. Analyze the performance characteristics of various electrical machines
3. Evaluate the performance of transformer

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Draw the circuits for a given electrical machine (k2).
CO2 Obtain the performance characteristics of DC Generators.(K3)
CO3 Analyze the operating behavior of DC motors under various loading condition. (K3)
CO4 Obtain the equivalent circuit parameters of transformer(K3)
CO5 Know the different starting and control measures involved in the operation of electrical machines. (K2)

**LIST OF EXPERIMENTS:**

1. Study of DC Motor starters
2. Study of DC motor windings.
3. Study of three phase transformer connections
4. Swinburne‘s test and Load test on DC shunt motor.
5. Load test on DC series motor
6. Load test on DC compound motor
7. Speed control of DC shunt motor (Field control & armature control method)
8. Open circuit and load characteristics of DC shunt generator
9. Open circuit and short circuit test on single phase transformer
10. Open circuit and short circuit test on three phase transformer
11. Load test on single/three phase transformer
12. Separation of core losses on single phase transformer

**TOTAL: 60 HOURS**

**ADDITIONAL EXPERIMENTS / INNOVATIVE EXPERIMENTS :**

1. Cut view study of DC motor.
2. Sumpner‘s test on single phase transformer.

**REFERENCES:**

1. B.A.Naveen Antony, ―Electrical Machinery laboratory-1 Manual‖, 2018.
2. D.P. Kothari & B.S. Umre, Laboratory Manual for Electrical Machines, I.K. International publishing house Pvt. Ltd., 2013.
3. B. L. Theraja and A. K. Theraja, ―Text Book of Electrical Technology: AC & DC Machines – Volume 2‖, S.Chand & Company Ltd., New Delhi, 2008.

**1702EE352 ELECTRON DEVICES AND CIRCUITS LABORATORY L T P C**
**0 0 2 1**

**PREREQUISITE:**

1. Semiconductor Physics and Devices
2. Electric Circuit Analysis

**COURSE OBJECTIVES:**

1. To analyze V-I Characteristics of different switches
2. To Design a transistor based amplifier circuits
3. To understand the operations of Digital Storage Oscilloscope.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Illustrate the turn on and turn off process of different switches (K3)
CO2 Design a circuit, which is used to convert ac signal to dc signal (K4)
CO3 Determine voltage gain from CE and CB configurations (K3)
CO4 Determine the frequency and gain value of various types of oscillators and amplifiers.(K3)
CO5 Study and understand the operation of digital storage oscilloscope(K2)

**LIST OF EXPERIMENTS:**

1. Study on data sheets of electronic devices.
2. Study of digital storage oscilloscope.
3. Characteristics of PN junction diode and Zener diode.
4. Design a half wave and full wave rectifier with and without capacitive filter.
5. Design of Clipper and Clamper circuit.
6. Verify the V-I characteristic of photo diode and phototransistor.
7. Characteristics of CE and CB configurations.
8. Design and verify the frequency response of single stage transistor amplifier.
9. Characteristics of JFET /MOSFET.
10. Design and verify the frequency response of RC phase shift oscillator.

**TOTAL: 30 HOURS**

**ADDITIONAL EXPERIMENTS / INNOVATIVE EXPERIMENTS :**

1. Design of transistor based differential amplifier
2. Design of monostable multivibrators

**REFERENCES:**

1. K. Krishnaram, ―Electronic Devices and Circuits – Lab Manual‖2018.
2. Milman, Halkias and SatyabrataJi,–ElectronicDevicesandCircuits‖4th Edition, McGraw Hill Education (India) Private Ltd, 2015.
3. Thomas L. Floyd, Electronic Devices, 10th Edition, an Imprint of McMillan Publishing Company, 2017.

| 1704EE353 | TECHNICAL SEMINAR I | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 2 | 1 |

**PREREQUISITE :**

-

**COURSE OBJECTIVES:**

1. To develop self-learning skills of utilizing various technical resources to make a technical presentation.
2. To promote the technical presentation and communication skills.
3. To impart the knowledge on intonation, word and sentence stress for improving communicative competence, identifying and overcoming problem sounds.
4. To promote the ability for Interacting and sharing attitude.
5. To encourage the commitment-attitude to complete tasks.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

| | |
|---|---|
| CO1 | Identify and utilize various technical resources available from multiple field (K2) |
| CO2 | Improve the technical presentation and communication skills(K2) |
| CO3 | Improve communicative competence(K2). |
| CO4 | Interact and share their technical knowledge (K2). |
| CO5 | Understand and adhere to deadlines and commitment to complete the assignments (K2). |

The students are expected to make two presentations on advanced topics (recent trends) related to II year/ III semester subjects. A faculty guide is to be allotted and he / she will guide and monitor the progress of the student and maintain attendance. Students are encouraged to use various teaching aids such as power Point presentation and demonstrative models.

**TOTAL: 30 HOURS**

**EVALUATION SCHEME:**

**Continuous Assessment (100 Marks)**

| Distribution of Marks for Continuous Assessment | Marks |
|---|---|
| Presentation I | 40 |
| Report | 10 |
| Presentation II | 40 |
| Report | 10 |
| **Total** | **100** |

| 1704GE351 | LIFE SKILLS : SOFT SKILLS | L | T | P | C |
|---|---|---|---|---|---|
| | (Common to all B.E / B.Tech Degree Programmes ) | 0 | 0 | 2 | 1 |

**PREREQUISITE :**

1. Technical English
2. Communicative English

**COURSE OBJECTIVES:**

1. To develop the students basic soft skills and enable them to get a job.
2. To develop the students 'interpersonal skills and to enable them to respond effectively.
3. To develop the students selling skills and to enable them to apply in their interview process.
4. To develop the students 'Corporate Etiquettes and enable them to respond effectively.
5. To develop the students 'learning by practice of giving different situations.

**COURSE OUTCOMES:**

On the successful completion of the course, students will be able to

CO1 Communicate effectively in their business environment.
CO2 Improve their interpersonal skills, which are mandatory in a corporate world.
CO3 Brand themselves to acquire a job.
CO4 Involve in corporate etiquettes.
CO5 Survive in the different situations.

**UNIT I INTRODUCTION TO SOFT SKILLS** **6 Hours**

Soft Skills an Overview - Basics of Communication – Body Language – Positive attitude –Improving Perception and forming values – Communicating with others.

**UNIT II TEAM Vs TRUST** **6 Hours**

Interpersonal skills – Understanding others – Art of Listening - Group Dynamics – Networking - Individual and group presentations - Group interactions – Improved work Relationship.

**UNIT III SELLING ONESELF** **6 Hours**

How to brand oneself – social media – job hunting – Resume writing – Group Discussion – Mock G.D - .Interview skills – Mock Interview

**UNIT IV CORPORATE ETIQUETTES** **6 Hours**

What is Etiquette – Key Factors – Greetings – Meeting etiquettes – Telephone etiquettes – email etiquettes – Dining etiquettes – Dressing etiquettes – Rest room etiquettes – Life etiquettes.

**UNIT V LEARNING BY PRACTICE** **6 Hours**

1. My family. Myself. 2. Meeting people. Making Contacts. 3. A city. Getting about town. 4. Our flat. Home life.5. Travelling. Going abroad. 6. Going through Customs. 7. At a hotel. 8. Shopping. 9. Eating out. 10. Making a phone call. 11. A modern office.12 Discussing business.

**TOTAL: 30 HOURS**

**ASSSESSMENT PATTERN**

1. Two assignments ( 2 x 25 marks = 50 marks)
2. Pragmatic assessment ( 50 marks)

**REFERENCES:**

1. Dr.K.Alex, _Soft Skills' Third Edition, S.Chand & Publishing Pvt. Limited, 2009
2. Aruna Koneru, _Professional Communication' Second Edition, Tata McGraw-Hill Education, 2008
3. D.K.Sarma, _You & Your Career' First Edition, Wheeler Publishing & Co Ltd, 1999
4. Shiv Khera _You Can Win' Third Edition, Mac Millan Publisher India Pvt. Limited, 2005