IPS Academy, Institute of Engineering & Science

(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)

Scheme Based on AICTE Flexible Curricula (B. Tech)

Electrical and Electronics Engineering Department

(For Batches admitted in 2022-23)

IV Semester

w.e.f. Jan 2024

S. No.	Subject Code	Category	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours/ Week			Total Credits
				Theory			Practical			L	T	P	
				End Sem.	Mid Sem. Exam	Quiz/ Assignment	End Sem.	Lab Work & Sessional					
1	BSC-MA03 (a)	BSC	Probability and Statistics	60	25	15	-	-	100	2	1	-	3
2	PCC-EE05	PCC	Electrical Machine-I	60	25	15	-	-	100	2	1	-	3
3	PCC-EE06	PCC	Analog and Digital Communication Systems	60	25	15	-	-	100	2	1	-	3
4	PCC-EE07	PCC	Signals and Systems	60	25	15	-	-	100	2	1	-	3
5	PCC-EE08	PCC	Electromagnetic Fields	60	25	15	-	-	100	2	1	-	3
6	HSMC- HS04	HSMC	Entrepreneurship and Principles of Management	60	25	15	-	-	100	1	-	-	1
7	IFC-CI01	IFC	Interdisciplinary Foundation Course-I	60	25	15			100	2	-	-	2
8	LC- EE05(P)	LC	Electrical Machine-I Lab	-	-	-	60	40	100	-	-	2	1
9	LC -EE06(P)	LC	Communication Lab	-	-	-	60	40	100	-	-	2	1
10	SBC- EE02(P)	SBC	Simulation Lab - I	-	-	-	60	40	100	-	-	2	1
11	MLC 02	MLC	Constitution of India	-	-	-	-	100	100	-	-	2	NC
Total				**420**	**175**	**105**	**180**	**120**	**1200**				**21**

- **Interdisciplinary Foundation Course-I, IFC-CI01**

(Offered by Computer Science Engineering Department).

1 Hr. Lecture	1 Hr. Tutorial	2 Hr. Practical
1 Credit	1 Credit	1 Credit

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
				CIE	ESE
BSC-MA03 (a)	Probability and Statistics	2:1:0	3	40	60

Recommended Prerequisite: Basic Mathematics

Course Objective: The objective of this course is two familiarize the students with statistical techniques, develop statistical skills and increase students' thinking power. It aims to equip the students with standard concepts and tools at an intermediate to advance level that will serve them well towards tackling various problems in the discipline.

Module 1 (10 hrs)

Data Collection & Analysis : Introduction and importance of statistics, Types of data, Methods of collecting primary data, Methods of sampling, Merits and limitations of sampling, Types of classification, Formation of frequency distribution, Tabulation of data, Frequency distribution, Types of graphs and diagrams, Histogram, Bar diagram, Frequency polygon, Frequency curve, Ogive, Pie diagram, Pictogram.

Module 2 (8 hrs)

Statistical Measures: Measures of central tendency, Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean, Measures of absolute dispersion, Range, Quartile deviation, Average deviation, Standard deviation, Skewness and Kurtosis.

Module 3 (9 hrs)

Correlation & Regression Analysis : Introduction, Significance, Types, Scatter diagram, Karl Pearson's correlation coefficient, Coefficient of correlation, Rank correlation coefficient, Regression lines, Regression equations, Standard error of estimate.

Module 4 (10 hrs)

Probability Theory : Definition of probability, Mutually exclusive events, Additive law of probability, Compound events, Dependent and independent events, Multiplicative law of probability, Conditional probability, Total probability, Bayes' theorem, Random variables and their properties, Probability mass function, Probability density function.

Module 5 (8 hrs)

Discrete and Continuous Probability Distributions: Introduction, Discrete distribution: Binomial and Poisson's distribution, Continuous distribution: Normal distribution, Exponential distribution, Gamma & Beta distribution.

Course Outcomes:

Students earning credits will develop ability to:

1. To explain concept of statistical analysis and find the distribution behind data.
2. To explain and apply the basic ideas of statistics including measures of Central tendency.
3. To explain and apply the concepts of correlation and regression.
4. To define the principal concepts about probability and apply to engineering problems.
5. To explain and apply the concepts of probability distribution in evaluation of engineering problems.

Textbooks/References:

1. J. Susan Milton and Jesse Arnold, Introduction to Probability and Statistics, McGraw Hills 2017
2. B.V. Ramanna, Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 2017.
3. C. Douglas Montgomery and G. C .Runger, Applied Statistic and Probability for Engineers,
4. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Probability and Statistics for engineering and Scientist, Pearson Education, 9th Edition, 2011.
5. Dr. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44 thEdition, 2020.
6. Dr. T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham, Dr. M.V.S.S.N. Prasad,Probability and Statics S. Chand Publication,
7. A Text Book for Probability and Statistics, Morris H. Degroot, 4th Edition 2012.

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
PCC-EE05	Electrical Machine - I	2:1:0	3	CIE	ESE
				40	60

Course Objectives: To teach students basic principle of operation, construction and application of static and rotating electrical machines.

Pre Requisite:- Fundamentals of electrical engineering

Module 1: (Hrs.)

Transformer-I: Working principle, e.mf. equation, construction, phasor diagrams, equivalent circuit, voltage regulation, losses, separation of hysteresis and eddy current losses, efficiency, tests: open circuit and short circuit, load, Sumpner's test, Condition for maximum efficiency and regulation, Power and distribution transformer, allday efficiency. Autotransformer: working, advantages.

Module 2: (Hrs.)

Transformer-II: Three phase transformer: its construction, groups and connections, their working and applications; Scott connection; Parallel operation of Transformers: application, advantages, requirement and load sharing; Tap changers, cooling, conservator and breather.

Module 3: (Hrs.)

Three phase Induction Motor- I:Working principle, construction, comparison of slip ring and squirrel cage motors, steady state analysis, phasor diagram and equivalent circuit, power flow diagram, torque-speed and power-speed characteristics, Losses and efficiency, No load and block rotor test. Starting of squirrel cage and slip ring motors, power factor control, Cogging & Crawling.

Module 4: (Hrs.) Three phase Induction Motor- II: Double cage &Deep bar Indication Motor, impact of unbalanced supply and harmonics on performance, speed control, braking, Induction Generator.

Module 5: (Hrs.)

Single Phase Motors: Single Phase Induction motor; double revolving field theory, equivalent circuit and its determination, performance calculation, starting methods and types of single phase Induction motors: their working principle and applications, comparison with three phases Induction Motor.

Course Outcomes: Students will be able to:

CO1. Illustrate the working principle, construction, operation and testing of Single Phase Transformer.

CO2. Illustrate the working principle, construction, operation and testing of Three Phase Transformer.

CO3. Illustrate the working principle, construction, operation and testing of Three Phase Induction Motor.

CO4. Discuss the starting and control of Induction Motor.

CO5. Illustrate the working principle, construction, operation and testing of Single Phase Induction Motor.

Textbooks/ References

1. Electrical Machines by Nagrath and Kothari, McGraw-Hill
2. Electrical Machines by P.S. Bimbhra, Khanna Publishers
3. V.Del Toro, “Electrical Machines & Power Systems”, 1985, Prentice-Hall, Inc., Englewood Cliffs.
4. Ashfaq Hussain, Electrical Machines, Dhanpat Rai & Co

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
PCC-EE06	Analog & Digital Communication System	2:1:0	3	CIE	ESE
				40	60

Course Objective:-Objective of this course is to introduce the students with basic concepts of analog and digital communication System.

Pre Requisite:-Basic concept of signals and systems.

Module 1

Introduction: Overview of typical Communication system,,overview of frequency domain analysis(Fourier Transform), Communication channels Need for modulation, Baseband and Pass band signals, Amplitude Modulation: Double side band with Carrier (DSB-C), Double side band without Carrier, Single Side Band Modulation, DSB-SC, DSB-C, SSB-SC,Generation of AM, DSB-SC, SSB-SC, VSB-SC & its detection,Vestigial Side Band (VSB).`

Module 2

Type of angle modulation, narrowband FM, wideband FM, its frequency spectrum, transmission BW, methods of generation (direct & Indirect), detection of FM (discriminators: balanced, phase shift and PLL detector), pre emphasis and de-emphasis. FM transmitter & receiver: Block diagram of FM transmitter & receiver

Module 3

Pulse Modulation and Sampling: Pulse modulation overview, PAM, PWM, PPM (concept + waveforms), Sampling theorem, Nyquist rate, aliasing, reconstruction (LPF) Practical sampling Natural sampling, flat-top sampling, Quantization, Uniform quantization, quantization noise, SQNR (basic concept), Pulse Code Modulation (PCM), Encoder/decoder block diagram, Companding: μ-law and A-law (concept)

Module 4

Digital Modulation Systems: Digital baseband transmission basics Bit rate, symbol rate, bandwidth requirement Line coding (basic), NRZ, RZ, Manchester (overview), Digital modulation schemes, ASK, FSK, PSK (BPSK, QPSK), QAM (basic idea), Constellation diagrams (basic), Probability of error (intro level), BER concept, factors affecting BER, Coherent and non-coherent detection, Matched filter concept (basic), receiver block diagrams

MODULE 5: Communication Performance and Multiplexing

Channel capacity and limits, Shannon capacity theorem (basic understanding), Noise performance in analog & digital, SNR improvement in FM, effect of noise in digital systems, Multiplexing techniques, FDM, TDM, WDM (overview + applications), Spread Spectrum (basic), DSSS, FHSS concept, applications (GPS, Wi-Fi idea), Basics of modern digital communication, OFDM introduction, brief idea of mobile communication system blocks

Course Outcomes:-After successful completion of course students will be able to:

CO 1: Compute Fourier Transform and analyze different types of signals and systems.
CO2: Understand the need of modulation and different types of Analog modulation schemes.
CO 3: Analyze different aspects of PCM techniques.
CO 4: Identify and describe different types of digital modulations
CO 5: Understand and analyze the source and channel coding.

Text/ Reference books:

1. Singh &Sapre, Communication System, TMH
2. Taub& shilling, Communication System, TMH
3. B.P. Lathi, Modern Digital and analog communication system,
4. Simon Haykins, Communication System. John Willy

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
PCC-EE07	Signal & System	2:1:0	3	CIE	ESE
				40	60

Course Objective:-

The course will provide strong foundation on signals and systems which will be useful for creating foundation of communication and signal processing. The students will learn basic continuous time and discrete time signals and systems. Student will understand application of various transforms for analysis of signals and systems both continuous time and discrete time.

Pre Requisite:- Should have knowledge of mathematics, differential equations and difference equation, Laplace transform and Fourier series.

Module 1 (11 Hrs.)

Introduction of signals and systems: Some special continuous time signals (CT signals) & discrete time signals (DT signals) - Step, ramp, pulse, impulse, sinusoidal and exponentialsignals, basic operations on signals, classifications of CT and DT signals- Periodic and aperiodicsignals, energy and power signals, random & deterministic signal, even & odd signal, causal &non causal signal, Classification of system - CT systems and DT systems – Static & Dynamic,Linear & Nonlinear, Time-variant & Time-invariant, Causal & Non-causal, Stable & Unstable.

Module 2 (08 Hrs.)

Analysis of continuous time signals: Time and frequency domain analysis, Fourier seriesanalysis, spectrum of CT signals, Fourier transform and Laplace transform, region of convergence.

Module 3 (07 Hrs.)

Linear time invariant continuous time systems: Differential equations representation, blockdiagram representation, state variable representation and matrix representation of systems,impulse response, step response, frequency response, reliability of systems, analog filters.

Module 4 (07 Hrs.)

Analysis of discrete time signals: Convolution sum and properties, sampling of CT signals and aliasing, DTFT and properties, Z transform and properties, inverse Z transform.

Module 5 (07 Hrs.)

Linear time invariant discrete time systems: Difference equations representation, block diagram representation, state variable equations and matrix representation of systems, impulse response, analysis of DT LTI systems using DTFT and Z transform, Digital filters"

Course Outcomes: Students will be able to:

CO1. Classify different types of commonly used signals & systems and describe how to perform mathematical operations on signals.

CO2. Analyze continuous time signals in time domain and frequency domain.

CO3. Analyze linear time invariant continuous time systems using differential question, block diagram and state variable representations**.**

CO4. Analyze discrete time signal using Z transform and convolution.

CO5. Analyze DT LTI systems using DTFT and Z-Transform.

Textbooks/ References

1. Alan V. Oppenheim, Alan S. Willsky, S Hamid Nawab, 'Signals and systems', 2ndedition 2015 Pearson New International Edition.
2. Anand Kumar, Signals and Systems, PHI, III edition, 2015 Pearson Education
3. MahmoodNahvi, Signals and Systems, McGraw Hil
4. Tarun Kumar Rawat, ' Signals & Systems', Oxford University Press

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
PCC-EE08	Electromagnetic Fields	2:1:0	3	CIE	ESE
				40	60

Course Objectives: To introduce the basic mathematical concepts related to electromagnetic vector fields. To impart knowledge on the concepts of electrostatics and magneto statics fields.

Pre Requisite:- Fundamentals of electrical engineering and should have basic knowledge of Ordinary differential equations, Matrix, Laplace and Fourier Series & transform

Course Contents (Module 1 to 5):

Module 1: (Hrs.)

Cartesian, cylindrical & spherical co-ordinate systems, scalar & vector fields. Electrostatic Fields – Coulomb's law, electric field intensity due to different charge distribution viz. line charge, sheet charge, Field due to continuous volume – electric potential, properties of potential function, potential gradient equipotential surfaces, line of force, Gauss law, applications of Gauss law, Gauss law in point form. Divergence theorem.

Module 2: (Hrs.)

Laplace's & Poisson's equations, solution of Laplace's equation, Electric dipole, dipole moment, potential & electric field intensity due to dipole, Behavior of conductors in an electric field. Conductor & insulator, electric field inside a dielectric, polarization, Boundary value conditions for electric Field, Capacitance & Capacitances of various types of capacitors, Energy stored and energy density in static electric field, Current density, conduction & convection current density ohms law in point form, equation of continuity.

Module 3: (Hrs.)

Static Magnetic Field, Biot-Savart's law, Magnetic Field intensity due to straight current carrying filament, circular, square and solenoidal current carrying wire & Stokes's theorem. Relationship between magnetic flux, flux density & magnetic Field intensity; Ampere's circuital law and its applications, magnetic, curl of a vector field, Ampere's circuital law in point form, Magnetic force, moving charge in a magnetic field, Lorentz Force on straight and long current carrying conductors

in magnetic field, force between two long & parallel current carrying conductors. Magnetic dipole & dipole moment, a differential current loop as dipole, torque on a current carrying loop in magnetic field, Magnetic Boundary conditions.

Module 4: (Hrs.)

Scalar magnetic potential and its limitations, Vector magnetic potential and its properties. Energy stored in magnetic Field & energy density, Faraday's Law, transformer & motional EMFs, Displacement current, Maxwell's equations as Generalization of circuit equations, Maxwell's equation in free space, Maxwell's equation for harmonically varying Field, static and steady fields, Maxwell's equations in differential & integral form.

Module 5: (Hrs.)

Electro Magnetic Waves : Uniform plane wave in time domain in free space, Sinusoidally time varying uniform plane wave in free space, Wave equation and solution for material medium, Uniform plane wave in dielectrics and conductors, Pointing Vector theorem, instantaneous, average and complex poynting vector, power loss in a plane conductor.

Course Outcomes: Students will be able to:

CO1: Solve the problems in different EM field with the help of Cartesian, Cylindrical, Spherical Coordinate systems and various laws of electrostatic fields.

CO2: Explain the behavior of conductor in electrostatic fields and boundary value conditions for electric field.

CO3: Explain the concept of magneto static field and its various laws.

CO4: Solve Electromagnetic problems using Maxwell equations (Differential & integral form).

CO5: Analyze electromagnetic wave equation in time domain in free space, dielectric, conductor and its solution for material medium.

Textbooks/ References

1. Mathew N.O Sadiku; Elements of Electromagnetic; Oxford.
2. William H. Hayt; Engineering Electromagnetic; TMH.
3. N.N. Rao; Element of Engineering Electromagnetic; PHI.
4. S.P. Seth; Electromagnetic Field ;Dhanpat Rai & Sons.
5. David K. Cheng; Fields and Wave Electromagnetic; Addison Wesley.

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
HSMC-HS04	Entrepreneurship and principles of Management	1:0:0	1	CIE	ESE
				40	60

Course Objectives:

- Explain Entrepreneurship and its importance
- Describe the importance E-commerce
- Explain the importance Digital Marketing in current scenario.
- Describe the importance of planning and organization Structure.
- Discuss the control process and its elements

Pre Requisite:- Nil

Course Contents (Module 1 to 5):

Module 1: (8 Hrs.)

Entrepreneurship: Definition, requirements to be an entrepreneur, entrepreneur and intrapreneur, entrepreneur and manager, growth of entrepreneurship in India, Types of Enterprises and Ownership Structure**.**

Module 2: (10 Hrs.)

E-commerce and its Technological Aspects: Overview of developments in Information Technology and Defining E-Commerce: The scope of E commerce, Benefits and limitations of E-Commerce

Module 3: (8 Hrs.)

Introduction to Digital Marketing: Evolution of Digital Marketing from traditional to modern era, Role of Internet, Search Engine Advertising, Display marketing, Social Media Marketing

Module 4: (8 Hrs.)

Business Management: Definition, Functions, Process, Scope and Significance of Management. Nature of Management, Managerial Roles, Managerial Skills and Activities, Propritership, Ltd., Pvt. Ltd., Company act registration, Startup India, DPIIT, Yukti Portal, Gumasta Lisences, Indian startup policy, MP startup policy, Closing a company, Leadership aspects.

Module 5: (10 Hrs.)

Management Functions: Nature, Scope, Objective and Significance, Elements and Steps of Planning & organizing, Delegation and Decentralization. Formal and Informal Organizations

Directing: Effective Directing, Supervision, Different Theories of Motivation,

Controlling and Coordinating: Elements of Managerial Control, Control Systems, Management Control Techniques, Coordination Concept, Importance, Principles and Techniques of Coordination.

Course Outcomes: After completion of the course student will be able to:

CO1: Understanding of basic concepts, principles and practices entrepreneurship.

CO2: Understanding of basic concepts & Importance of e-commerce.

CO3: Understanding of basic concepts of digital marketing

CO4: Understanding the planning and organizing & organization Structures.

CO5: Importance of Management Control Techniques

Textbooks/ References

1. Chhabra T.N., Principles and Practice of Management. 10th ed Year 2018.
2. Murton- Gulab, Management Today. 3th ed.1998
3. KoontzH. and O"DonnelH., Essential of Management, 8th ed., McGraw-Hill, New Delhi, 2009.
4. Robbins, S. Fundamentals of Management. 5th ed., Pearson Education, Canada, 2008.
5. Mohanty SK; Fundamental of Entrepreneurship; PHI, 2005.
6. Prasad L M, Principles and Practices of Management, S. Chand and Sons, New Delhi ,2018
7. Terry & Francklin, Principles of Management, Richard– Erwin.18th Ed. 1982

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
				CIE	ESE
IFC-CI01	Interdisciplinary Foundation Course-I Foundation of Computer Science	2:0:0	2	40	60

Course Objective: The main objective of this course is to provide conceptual understanding of object oriented programming and database management system.

Course Contents: (25 firs.)

Module 1: (05 hrs.)

Introduction to Object Oriented Programming, Comparison with Procedural Programming, features of Object oriented paradigm, merits and demerits of OO methodology; Data Encapsulation: Concept of Classes & Objects; State, Behavior & Identity of an object.

Module 2: (05 hrs.)

Data Abstraction and Message Passing: Methods, Calling of constructors, Decision making constructs, Control loops, Concept of Packages, Basic idea of exception handling, Inheritance, Interfaces, Polymorphism.

Module 3: (05 hrs.)

Introduction to DBMS, File system vs DBMS, Advantages of database systems, Database System architecture, Data models, Schemas and instances, Data independence, Functions of DBA and designer, Design issues, ER- Modal

Module4: (05 hrn.)

Structure of relational databases, Domains, Relations, Relation algebra – fundamental operators and syntax, relational algebra queries, Integrity constraints, Referential integrity, Keys.

Module 5: (06 hrs.)

Functional Dependency –definition, trivial and nontrivial FD, closure of FD set, closure of attributes, Normalization –1NF, 2NF,3NF, BCNF, 4NF and 5NF.

Course Outcome:

1. Understand object oriented programming concepts.
2. Develop skill in data abstraction and message passing

3. Describe basic concepts of DBMS and Explain ER model.

4. Describe Relational Algebra and Keys

5. Understanding of functional dependencies and normalization theory

Textbooks/ References

1. G. Booch, “Object Oriented Analysis & Design”, Pearson.

2. Barbara Liskov, Program Development in Java, Addison-Wesley, 2001

3. Date C J, “An Introduction to Database System”, Pearson Educations, 8 th Edition,2003.

4. Korth, Silbertz,Sudarshan, “Fundamental of Database System”, McGraw Hill,5th Edition,2006.

5 . Atul Kahate ,“ Introduction to Database Management System”, PearsonEducations,2004.

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Practical	
LC-EE05(P)	Electric Machine I Lab	0:0:2	1	CIE	ESE
				40	60

Course Objective:- To teach students basic principle of operation, construction and application of static and rotating electrical machines.

Pre Requisite:- Fundamentals of electrical engineering.

List of Experiments

1. Perform turn ratio and polarity test on1-phasetransformer
2. Perform load test on a 1-phase transformer and plot its load characteristic.
3. Perform OC and SC tests on a 1-phase transformer and determine its equivalent circuit. Also find its efficiency and regulation at different load and power factor.
4. Perform OC and SC tests on a 3-phase transformer and determine its equivalent circuit. Also find its efficiency and regulation at different load and power factor.
5. Perform Sumpner's test on two 1-phase transformer and determine its efficiency at various load.
6. Perform No-load and block rotor test on a 3- phase IM and determine its equivalent circuit.
7. Perform load test on a 3- phase IM and plot its performance characteristics.
8. Study various types of starters used for 3-IMs.
9. Perform No-load and block rotor test on a 1- phase IM and determine its equivalent circuit.
10. Perform stepper motor for 90 degree in forward and 90 degree in reverse in 20 sec using PLC.

Course Outcomes: Students will be able to:

CO1. Illustrate the working principle, construction, operation and testing of Single Phase Transformer.

CO2. Illustrate the working principle, construction, operation and testing of Three Phase Transformer.

CO3. Illustrate the working principle, construction, operation and testing of Three Phase Induction Motor.

CO4. Discuss the starting and control of Induction Motor.

CO5. Illustrate the working principle, construction, operation and testing of Single Phase Induction Motor.

Textbooks/ References

1. Electrical Machines by Nagrath and Kothari, McGraw-Hill.
2. Electrical Machines by P.S. Bimbhra, Khanna Publishers.

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Practical	
LC-EE06(P)	Communication Lab	0:0:2	1	CIE	ESE
				40	60

Course Objective:-Objective of this course is to introduce the students with basic concepts of analog and digital communication System.

Pre Requisite:-Basic concept of signals and systems.

List of Experiments

1. To study different types of signals and their properties
2. To perform and analyze experiment of Amplitude modulation (DSB Signal)
3. To perform and analyze experiment of Amplitude Demodulation (DSB Signal)
4. To perform and analyze experiment of Frequency Modulation & demodulation.
5. To perform and analyze experiment of Pulse amplitude Modulation & Demodulation
6. To perform and analyze experiment of time division multiplexing.
7. To perform and analyze experiment of pulse code modulation & demodulation
8. To perform and analyze experiment of BPSK & QPSK modulation

Course Outcomes:-After successful completion of course students will be able to:

CO 1: Compute Fourier Transform and analyze different types of signals and systems.
CO2: Understand the need of modulation and different types of Analog modulation schemes.
CO 3: Analyze different aspects of PCM techniques.
CO 4: Identify and describe different types of digital modulations
CO 5: Understand and analyze the source and channel coding.

Text/ Reference books:

1. Singh &Sapre, Communication System, TMH
2. Taub& shilling, Communication System, TMH
3. B.P. Lathi, Modern Digital and analog communication system,
4. Simon Haykins, Communication System. John Willy

IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Practical	
SBC-EE02 (P)	Simulation Lab - I	0:0:2	1	CIE	ESE
				40	60

Course Objectives: Summarize the knowledge about MATLAB Simulation Process.

Pre Requisite:- Basic of MATLAB and fundamental of Electrical Engineering.

List of Experiments

1. Introduction to Basic SIMULINK Modeling & Analysis.
2. Introduction of PSIM (Power Simulation Software) for power Electronics.
3. Simulation and of Uncontrolled Rectifier Circuits.
4. Simulation and of Controlled Rectifier Circuits.
5. Simulation of One Quadrant Chopper Circuit.
6. Simulation of Fourth Quadrant Chopper Circuit.
7. Simulation of Single Phase Half Wave Inverter.
8. Simulation of Single Phase Full Wave Inverter.
9. Simulation of AC Voltage Controller Circuit using MATLAB & PSIM.
10. Simulation and Analysis of Three Phase 120 Degree Inverter Circuit.

Course Outcomes: Students will be able to:

CO1. Analyzing operation of different power electronic converters .

CO2. Analyzing waveforms exhibited at the input and output ports of the converters.

CO3. Measure of input and outputs of converters.

IPS Academy

NSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Subject Code	Name of the Subject	L:T:P	Credits	Maximum Marks	
				Theory	
MLC 02	Constitution of India	2:1:0	3	CIE	ESE
				40	60

Course Objective: The objective of this course is to familiarize the students with the feature of the Indian constitution, laws, democracy etc.

Course Content:

Module 1 (06 hrs)

Historical Background: Formation and working of constituent Assembly, Formation and working of Drafting committee, Commencement of Indian Constitution, Dr. Ambedkar's ideas of reservation in constitution

Module 2 (05 hrs)

Important Feature of the Constitution: Preamble, Fundamental Rights, Directive Principles of state policy, Fundamental Duties, Centre State Relation

Module 3 (06 hrs)

Parliamentary Democracy: Loksabha, Rajsabha Central Exclusive President, Prime minister, and Central Ministry, Vidhan Sabha, Vidhan Parishad and State Executive (Governor, Chief Minister, Minister of State)

Module 4 (06 hrs) Special Provisions in Indian Constitution: Finance Commission Contingency Fund, Consolidated Fund, Public Service Commissions, Election Commission, Safeguards for S.C. S.T. and Backward Classes, Provisions for Emergency and Constitutional Amendments, Indian Judiciary Supreme court and High court

Suggested Reading

1. The Indian Constitution - Granville Austin
2. India's Constitution - M.V. Pylee, S. Chand Publication
3. Ambedkar and Constitution, Raj Kumar, Commonwealth Publication Pvt. Ltd., New Delhi,