



Sant Dnyaneshwar Shikshan Sanstha's
Annasaheb Dange College of Engineering and Technology, Ashta
An Autonomous Institute
Department of Electrical Engineering



**Annasaheb Dange College of Engineering
and Technology, Ashta
An Autonomous Institute**

**Revision 2
(To be implemented from 2023-2024 Academic Year onwards)**

Structure & Curriculum

First Year B.Tech



Sant Dnyaneshwar Shikshan Sanstha's
Annasaheb Dange College of Engineering and Technology, Ashta
An Autonomous Institute
Department of Electrical Engineering



Annasaheb Dange College of Engineering
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An Autonomous Institute

Curriculum

First Year B.Tech - Semester – I

Annasaheb Dange College of Engineering and Technology Ashta

Department of Electrical Engineering



Teaching and Evaluation Scheme

F. Y. B. Tech Semester I

Course Code	Course Name	Teaching Scheme				THEORY								PRACTICAL				GRAND TOTAL		
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total		Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2EEBS101	Applied Mathematics -I	3	1	0	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEPC102	Basic Electrical Engineering	3	0	0	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEES103	Applied Mechanics	2	0	0	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEES104	Basic Mechanical Engineering	2	0	0	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEES105	Programming for Problem Solving	2	0	2	3	-	-	-	-	-	-	-	50	20	50*	20	100	40	100	
2EEHS106	Professional Communication Skills	0	0	4	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEPC107	Basic Electrical Engineering Lab	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEES108	Applied Mechanics Lab	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEES109	Design Thinking	1	0	2	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEHS110	Value Added Course -1	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
Total		13	1	14	21															750
Total Contact Hours		28																		

* Internal Institute Faculty as an Examiner

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Department of Electrical Engineering

Teaching and Evaluation Scheme



F. Y. B. Tech Semester II

Course Code	Course Name	Teaching Scheme				THEORY								PRACTICAL				GRAND TOTAL		
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total		Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2EEBS111	Applied Mathematics -II	3	1	0	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEBS112	Applied Physics & Chemistry	4	0	0	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEPC113	Analog Electronics	3	0	0	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEES114	Engineering Graphics	2	0	0	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2EEVS115	Object Oriented Programming	1	0	2	2	-	-	-	-	-	-	-	50	20	50*	20	100	40	100	
2EEBS116	Applied Physics & Chemistry Lab	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEPC117	Analog Electronics Lab	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEES118	Engineering Graphics Lab	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2EEHS119	Value Added Course - 2	0	0	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
Total		13	1	10	19															700
Total Contact Hours		24																		

* Internal Institute Faculty as an Examiner

On exit at the end of first year

Course Code	Course Name	L	T	P	C
2EEEX101	Electrical Wiring	0	0	8	4
2EEEX102	Installation & Maintenance of appliances	0	0	8	4

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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester -I
Course Code and Course Title	2EEBS101 Applied Mathematics - I
Prerequisite	--
Teaching Scheme: Lecture / Tutorial / Practical	03/01/00
Credits	04
Evaluation Scheme: ISE / MSE/ ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
2EEBS101_1	Solve the system of linear equations by using matrix method and numerical techniques.
2EEBS101_2	Calculate Eigen values and Eigen vectors and power of matrix by using Cayley-Hamilton theorem.
2EEBS101_3	Fit the curves for bivariate data by applying least square techniques
2EEBS101_4	Apply Taylor series to find the expansion of functions.
2EEBS101_5	Compute the n^{th} power and roots of the complex number by using De-Moivre's Theorem.

Course Contents		Hours
Unit 1	Matrices and Solution of Linear System Equations: Rank of a matrix, Normal form of a matrix, echelon form, Consistency of linear system of equations (system of homogeneous and non- homogeneous linear equation).	07
Unit 2	Eigen Values and Eigen Vectors: Vectors, Linear dependence and linear independence of vectors, Eigen values, Properties of Eigen values, Eigen vectors, Properties of Eigenvectors, Cayley-Hamilton Theorem (Inverse and Higher powers of matrix).	08
Unit 3	Numerical Solution of System of Simultaneous Linear Equations: Gauss Elimination Method, Gauss-Jordan Method, Iterative Method –Gauss Jacobi method and Gauss Seidel method, Eigen value using Power method.	06
Unit 4	Statistics and Curve fitting: Method of Least Squares, Fitting of Straight Line, Fitting of Parabola, Fitting of exponential curves, Lines of Regression.	06
Unit 5	Calculus: Taylor's series, Maclaurin's series, Standard expansions, Expansion of function using Standard series, Indeterminate forms.	07
Unit 6	Complex Numbers: De Moivre's theorem, Roots of a complex number, Expansion of $\sin(nx)$ and $\cos(nx)$ in powers of $\sin x$ and/or $\cos x$, Circular functions of a complex variable, Hyperbolic functions, relation between circular and hyperbolic functions, Inverse Hyperbolic functions.	08


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Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Numerical Methods in Engineering & Science	Dr. B. S Grewal	Khanna Publishers	9 th	2010
02	Advanced Engineering Mathematics	H. K. Das	S. Chand	22 nd	2018
03	A textbook of Applied Mathematics	P.N. Wartikar & J. N. Wartikar	Pune Vidyarthi Griha Prakashan	1 st	2008
04	Higher Engineering Mathematics	B. V. Ramana	TMH	6 th	2010

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers	44 th	2018
02	Advanced Engineering Mathematics	N. P. Bali Manish Goyal	Infinity Science Press	7 th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10 th	2017
04	Numerical Methods	Dr. P. Kandasamy Dr.K.Thilagavathy Dr. K. Gunavathi	S. Chand	1 st	2010

List of Tutorial:

Sr. No.	Title of Tutorials
1	Matrices and Solution of Linear System Equations :Normal form, system of homogeneous linear equation
2	System of non- homogeneous linear equation
3	Eigen Values and Eigen Vectors
4	Cayley-Hamilton Theorem
5	Numerical Solution of System of Simultaneous Linear Equations
6	Curve Fitting I: Fitting of Straight Line and Fitting of Parabola
7	Curve Fitting II: Fitting of exponential curves and Lines of Regression
8	Expansion of function


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Department of Electrical Engineering

Class	F.Y.B. Tech. Semester-I
Course Code and Course Title	2EEPC102 Basic Electrical Engineering
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial /Practical	03/00/00
Credits	03
Evaluation Scheme: ISE / MSE/ ESE	40/30/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:

2EEPC102_1	Explain basic terminologies related to DC, AC and magnetic circuits to relate the operations of electrical devices using electrical laws.
2EEPC102_2	Relate the concepts of AC fundamentals to single-phase and three-phase AC circuits to describe the generation of AC with phasor representation.
2EEPC102_3	Interpret the relationship between line and phase quantities in three-phase AC circuits using star and delta connection for industrial loads
2EEPC02_4	Demonstrate wiring circuits and illumination schemes using circuit diagrams on the basis of recent trends and applications.
2EEPC102_5	Apply conceptual understanding of AC & DC parameters to solve electrical circuits and provide a solution

Course Contents		Hours
Unit 1	Fundamentals of DC Circuits EMF, voltage, current, work, power, energy, Ohm's law, its application and limitations, series and parallel circuit, temperature coefficient of resistance, voltage & current source, Kirchoff's laws, Star-delta transformations, electrical energy conversion with mechanical & thermal quantities.	08
Unit 2	Magnetic Circuits Concept of the magnetic circuit, comparison between electric and magnetic circuit, series magnetic circuit, self-inductance and mutual inductance, magnetization (B-H) curve, Hysteresis curve, magnetic leakage and fringing.	06
Unit 3	AC Fundamentals Faraday's law of Electromagnetic Induction, Statically Induced EMF. Dynamically Induced EMF, Generation of Sinusoidal EMF, RMS value, Average value, Form Factor, Peak factor, Graphical and Mathematical representation of Phasor	07
Unit 4	Single Phase AC Circuits Introduction to AC circuit, parameters of AC circuits, Analysis of R, L, C, R-L, R-C, R-L-C series circuit, R-L & R-L-C parallel circuit, Series Resonance, Parallel Resonance, Power in AC circuit, Power factor and power factor improvement by shunt capacitor.	08

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Department of Electrical Engineering

Unit 5	Three Phase AC Circuits Generation of three phase A.C voltage, advantages of three phase systems, Types of supply system and load connections, balanced three phase system, Relation between line and phase quantities, Three Phase Power measurement using Two Wattmeter Method [Theoretical treatment only]	07
Unit 6	Wiring Circuits, Lamps & Emerging Trends Wiring: Simple wiring, Staircase wiring, Godown wiring Lamps: Incandescent lamp, Fluorescent Tube, CFL, Mercury Vapour Lamp, Sodium Vapour Lamp, LED, comparison of lamps. Emerging Trends: Introduction of Electric Vehicles (EV), Energy Storage Systems.	06

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Basic Electrical Engineering	V. K. Mehta Rohit Mehta	S. Chand	5 th	2016
02	A Text book of Electrical Technology	B L Theraja & A K Theraja	S. Chand	1 st (Reprint)	2016
03	Basic Electrical Engineering	J. M. Kharade, M. D. Patil, D. B. Kanase	Wiley India	1 st	2018
04	Basic Electrical Engineering	I.J. Nagrath D. P. Kothari	Tata McGraw Hill	3 rd	2013

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Electrical Engineering Concepts and Applications	P. V Prasad & S. Shivanaraju	Cengage Learning	1 st	2012
02	Fundamentals of Electrical Engineering	Bharati Dwivedi Anurag Tripathi	Wiley	2 nd	2014
03	Electrical Engineering Fundamental	Vincent Del Toro	Pearson	2 nd	2003
04	Fundamentals of Electrical Engineering	Ashfaq Husain	Dhanpat Rai & co.	3 rd	2008
05	Basic Electrical & Electronics Engineering	S. K. Bhattacharya	Pearson	1 st	2012


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Sant Dnyaneshwar Shikshan Sanstha's
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An Autonomous Institute

Department of Electrical Engineering

Class	F. Y. B. Tech, Semester- I
Course Code and Course Title	2EEES103 Applied Mechanics
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial/Practical	02/00/00
Credits	02
Evaluation Scheme: ISE / MSE/ ESE	40/30/30

Course Outcomes (COs):

After successful completion of this course, the student will be able to:

2EEES103_1	Interpret the resultant force for a force system using resolution and composition.
2EEES103_2	Use the free body diagram of the force system by applying concept of equilibrium.
2EEES103_3	Identify the reactions at support of the beam by applying equilibrium conditions.
2EEES103_4	Choose the Centroid and center of gravity of different compound shapes using method of geometric decomposition.
2EEES103_5	Calculate moment of inertia for a composite plane lamina by using parallel and perpendicular axis theorem.

Course Contents

		Hours
Unit 1	Introduction to Applied mechanics Basic concepts - Particle, body, rigid body, force, types of force systems, law of transmissibility of force, moment of a force, couple, resolution of a force, resultant force, composition of forces, triangle law, parallelogram law, polygon law of forces.	04
Unit 2	Analysis of force systems Introduction to concurrent and non-concurrent force systems, magnitude and direction of concurrent force systems, Varignon's theorem, magnitude and direction of non-concurrent force systems.	05
Unit 3	Equilibrium of forces Concept of equilibrium, conditions of equilibrium, free body diagram, Lami's theorem.	05
Unit 4	Beam Types of load, types of support, types of beam, reactions at support, analysis of simple and compound beams using conditions of equilibrium.	05
Unit 5	Centroid Introduction to Centroid and Centre of Gravity, Centroid of standard figures, Centroid of composite figures.	04
Unit 6	Moment of Inertia Moment of Inertia, Moment of Inertia of Standard shapes from first principle, Parallel and perpendicular axis theorem, Moment of Inertia of plain and composite figures, Radius of Gyration.	05

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Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Basic Civil Engineering	G. K. Hiraskar	Dhanpatrai Publications	1 st	2008
02	Surveying	N. Basak	Tata Mac Graw Hill., Publications	1 st	2008
03	Engineering Mechanics	S. Ramamrutham	Dhanpatrai Publishing Company (P). Ltd	9 th	2010
04	Engineering Mechanics	R.S. Khurmi	S. Chand	Revised	2006
05	Engineering Mechanics	R. K. Bansal and Sanjay Bansal	Laxmi Publications Pvt. Ltd.	6 th	2013
06	Engineering Mechanics	K. L. Kumar	Tata McGraw Hill Education	4 th	2012
07	Engineering Mechanics	S. B. Junnarkar	Charotar Publications	16 th	2011
08	Engineering Mechanics	S.S. Bhavikatti	New Age International Pvt. Ltd.	4 th	2012

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Civil Engineering Handbook	P. N. Khanna	Engineer's Publishers	17 th	1999
02	The A to Z of Practical Building Construction and its Management	Sandeep Mantri	Satya Prakashan	1 st	2010
03	Engineering Mechanics	Timoshenko and Young	McGraw Hill	3 rd	2006
04	Engineering Mechanics	Irving H. Shames	Prentice Hall of India, New Delhi	5 th	2011
05	Vector Mechanics for Engineers Vol.-I and II	F. P. Beer and E. R. Johnson	Tata McGraw Hill Education	6 th	2011
06	Engineering Mechanics: Statics & Dynamics	Ferdinand Singer	Harper and Row	9 th	2009
07	Fundamentals of Engineering Mechanics	S. Rajasekaran	Vikas Publishing House Pvt. Ltd.	3 rd	2005


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Department of Electrical Engineering

Class	F. Y. B. Tech, Semester - I
Course Code and Course Title	2EES104 Basic Mechanical Engineering
Prerequisite/s	—
Teaching Scheme: Lecture/Tutorial /Practical	02/00/00
Credits	02
Evaluation Scheme: ISE / MSE/ ESE	40/30/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to	
2EES104_1	Classify the different processes for manufacturing based on different criteria.
2EES104_2	Describe generation processes to generate electricity from different energy sources.
2EES104_3	Explain the basic concept of IC engines and Gas laws by using PV-TS Curves.
2EES104_4	Discuss various refrigeration and air conditioning system depending upon the application areas.
2EES104_5	Select an appropriate mechanical and energy conversion device for a specific application.
2EES104_6	Calculate the operating and geometric parameters for power transmission systems by considering various factors.

Course Contents		Hours
Unit 1	Energy Sources & Power Plants Introduction, Renewable and non-renewable energy sources, Solar collector - Solar-flat plate collector, concentric collector - Parabolic and cylindrical, Photovoltaic cell, Wind Power Plant, Hydro-Electric power plant.	05
Unit 2	Internal Combustion Engine Introduction of IC Engine, Classification, Basic Components of IC Engines and Terminology of IC Engines, Four stroke and Two stroke engines, Difference in SI and CI Engine.	05
Unit 3	Refrigeration & Air conditioning system Introduction to refrigerator, ton of Refrigeration, COP, Refrigerant and its types, Vapor compression Refrigeration system and Vapor absorption Refrigeration system, Carnot Refrigerator	04
Unit 4	Mechanical systems and Energy conversion devices Introduction to Mechanical devices, Pump - Centrifugal Pump, Reciprocating Pump, Compressors - Centrifugal Compressor, Reciprocating Compressor, Hydraulic turbines - Impulse Turbine-Pelton, Reaction Turbine-Francis and Kaplan	05
Unit 5	Power Transmission Introduction to Power Transmission device, Belt drives - Open belt drive, Cross belt drive, and gears drive- Spur, Helical, Bevel, Rack and Pinion (Numerical on belt tensions, gear ratio, and velocity ratio).	05


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Department of Electrical Engineering

Unit 6	Manufacturing Processes Introduction, Casting process -Sand casting, Steps in sand casting Process, Metal joining processes - Arc welding, Gas welding, soldering and brazing, Metal Removing Process- Operations in Metal Cutting process.	04
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Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Solar Energy	Dr. S. P. Sukathame	Tata Mc- Graw Hill	4 th	2012
02	Non-Conventional Sources of Energy	G. D. Rai	Khanna Publication	5 th	2012
03	IC Engines	V. Ganesan	Tata Mc- Graw Hill	4 th	2013
04	Refrigeration and Air Conditioning	R.S.Khurmi J.K.Gupta	S. Chand	1 st	2012

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Manufacturing Technology	P. N. Rao	Tata Mc-Graw Hill	4 th	2014
02	Theory of machines	S.S. Ratan	Tata-McGraw Hill	3 rd	2012
03	Thermal engineering	P.L Ballaney	Khanna	24 th	2012
04	Refrigeration and Air Conditioning	Arora	Tata Mc-Graw Hill	8 th	2019


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Class	F. Y. B. Tech, Semester - I
Course Code and Course Title	2EEES105 Programming for Problem Solving
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/Practical	02/00/02
Credits	03
Evaluation Scheme: ISE/ESE	50/50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:

2EEES105_1	Prepare an algorithm and draw a flowchart to accurately solve various mathematical problems by using structured approach.
2EEES105_2	Apply the fundamental concepts like data types, operators to solve mathematical problems by using the C language.
2EEES105_3	Apply the decision and looping constructs to solve the problems related to decision, repetitive statements for real time problem statement using C language.
2EEES105_4	Develop a C program to demonstrate the modular approach by using the concept of function, structure, pointer, file handling.
2EEES105_5	Design and exhibit micro project for real time problems by using C language

Course Contents		Hours
Unit 1	Basics of Programming The meaning of algorithms, Flowcharts, Pseudo codes, writing algorithms and drawing flowcharts for simple exercises, Memory concepts, C Program development environment.	03
Unit 2	C Fundamentals Importance of 'C' Language, History, Structure of 'C' Program, Sample 'C' Program, Constants, variables and data types, Enumeration. Operators and expressions, managing input / output operations, Control Statements-Decision making, Case control & Looping Constructs.	07
Unit 3	Array The meaning of an array, one dimensional and two-dimensional arrays, declaration and initialization of arrays, reading, writing and manipulation of above types of arrays, multidimensional arrays. Strings-Declaring and initializing character array, reading and writing string to/from terminal, string handling functions.	04



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Unit 4	Functions Need of user defined functions, elements of User defined functions, defining functions, return values and their types, function calls, function declaration, methods of parameter passing, Scope rule of functions, user defined and library functions.	04
Unit 5	Structure & Pointers Need of Structure, defining a structure, declaring and accessing structure variables, structure initialization, copying and comparing structure variables, array of structures, structures and functions, Unions. Understanding pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer, pointer expressions, Types of pointer: Void pointer, generic pointer, null pointer, dangling pointer, pointer to a function, Calling A function through function pointer.	06
Unit 6	File Handling Defining and opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access files, command line arguments, C preprocessor.	04

Experiment List

1	Write an algorithm and draw flowchart for given problem statements.
2	Implement a program using different data types and operators in C.
3	Implement a program using decision control statements
4	Implement a program using repetitive control statements (for, while, do-while)
5	Implement a program using selection control statement
6	Implement a program using nested loop (for, while loop)
7	Implement a program to demonstrate 1D array and 2D array
8	Implement a program using user defined functions in C
9	Implement a program to demonstrate concept of structures in C
10	Implement a program to demonstrate concept of array of structures in C
11	Implement a program to demonstrate concept of pointers in C
12	Implement a program to demonstrate concept of file handling in C

Note: Minimum TEN experiments should be performed from the above list


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Department of Electrical Engineering

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Programming and Problem-Solving Using C Language	ISR D Group	McGraw-Hill	-	2012
02	Let Us C	Yashwant Kanetkar	BPB	3 rd	2011
03	C How to Program	Harvey M. Deitel Paul J. Deitel, Abbey Deitel	Pearson	2 nd	2009
04	Programming in ANSI C	E. Balguruswamy	TMH	4 th	2008

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	The 'C' Programming Language	D. M. Ritchie	Pearson	2 nd	1998
02	C Programming Laboratory: Handbook for Beginners	Sidnal	Wiley India Limited	1 st	2012
03	Understanding pointers in C	Yashwant Kanetkar	BPB	4 th	2001
04	Test your C Skills	Yashwant Kanetkar	BPB	5 th	2013


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Department of Electrical Engineering

Class	F. Y. B. Tech. Semester-I
Course Code and Course Title	2EEHS106 Professional Communication Skills
Prerequisite/s	12 th Standard English Grammar
Teaching Scheme: Lecture/Tutorial/ Practical	00/00/04
Credits	02
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS106_1	Exhibit the skill of sentence construction considering the frame of English language rules accurately for effective and sound communication
2EEHS106_2	Present their portfolio confidently considering SWOT analysis by using digital tools convincingly as per the corporate expectations
2EEHS106_3	Write formal letters proficiently by following required techniques that helps in maintaining professional affairs at workplace
2EEHS106_4	Produce professional presentations proficiently on assigned topics in convincing manner using necessary tools and techniques
2EEHS106_5	Justify own role in communicative events with balanced zeal, in well-organized manner


List of Practical's

01	Checking My English Communication
02	Self - Introduction
03	Presenting my Career Choices
04	Preparing my Portfolio
05	Enriching Vocabulary
06	Avoiding Common Errors
07	Presenting My Portfolio
08	Note Making
09	Getting Smart with Technical Description of charts/ Images/ Processes
10	Delivering Professional Presentation
11	Application and Resume Writing
12	Email Writing
13	GD (General)
14	Introducing Guest/ Friend
15	Extempore
16	GD (Technical)
17	Mock Interview
18	Organizing an Event


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Department of Electrical Engineering

Reference Books

Textbook					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	The Professional: Defining the New Standard of Excellence at Work	Subroto Bagchi	Penguin Books India Pvt. Ltd.	Revised Edition	2011
2	Cambridge Guide to IELTS	Pauline Cullen, Amanda French	Cambridge University Press	Reprint	2017
3	A Practical Course in Effective English Speaking Skills	J. K. Gangal	PHI Learning Private Limited, New Delhi	Print	2012
4	Personality Development and Soft Skills	Barun K. Mitra	Oxford University Press, New Delhi, India	Seventh Impression	2012

Reference Books					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	High-school English Grammar and Composition	Wren and Martin	S. Chand and Co., New Delhi	1 st	2015
2	The Ace of Soft Skills	Ajai Chowdry, Bala Balchandran	Pearson Publication, Delhi	8 th	2013
3	Effective Technical Communication	M. Ashraf Rizvi	Mc Graw Hill Education, Chennai	Second Edition	2017
4	Business Communication	Hory Sankar Mukerjee	Oxford University Press, New Delhi, India	Second Edition	2013

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Class	F. Y. B. Tech, Semester – I
Course Code and Course Title	2EEPC107 Basic Electrical Engineering Laboratory
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon completion of this course, students will be able to,

2EEPC107_1	Identify electrical components, equipment, Lamps and different illumination schemes using electrical apparatus & symbols to handle it properly for experimentation
2EEPC107_2	Measure electrical parameters with appropriate measuring instruments on the basis of ratings and type of connections
2EEPC107_3	Demonstrate the circuit law's, perform testing on electric machine to find the solutions with the help of various instruments for domestic and industrial applications
2EEPC107_4	Correlate and comment the observations and results of experiment with different laws to provide solution for given system
2EEES107_5	Practice safety precautions in day to day life & communicate effectively with ethics about laboratory work both orally and in writing

List of Experiments

Expt. No.	Title of Experiment
1	Study of Electrical Components, Laboratory Tools, Measuring Instruments, Energy Meter
2	Electrical Safety Precaution and Earthing
3	Kirchhoff's Voltage and Current Law
4	B-H Curve for Magnetic Material
5	RLC Series Circuit
6	Power Factor Improvement
7	Demonstration of Wiring Circuits
8	Lamps and Illumination Schemes
9	Three phase power measurement (Two Wattmeter Method)
10	Effect of temperature on resistance
11	LED lamp assembling, testing & maintenance.
12	Introduction to single phase energy meter and sample calculation of electricity bill.

Note: Minimum TEN experiments should be performed from the above list


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Class	F. Y. B. Tech, Semester - I
Course Code and Course Title	2EEES108 Applied Mechanics Lab
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial /Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes: Upon successful completion of laboratory work, the student will be able to	
2EEES108_1	Compute resultant and moments of a force system to verify the laws of forces for static state of body
2EEES108_2	Choose the position of centroid for a plane lamina by experimental method
2EEES108_3	Relate the magnitude of support reactions of a simply supported beam using experimental and analytical method
2EEES108_4	Interpret the resultant force and reactions at support for a force system based on concepts of resolution and composition
2EEES108_5	Calculate moment of inertia for a composite plane lamina by using parallel and perpendicular axis theorem
2EEES108_6	Exhibit communication skill and ethical behavior as an Engineer while performing experiments in laboratory based on written, oral communication and professional behavior

List of Experiments

Exp. No.	Title of Experiments
1	To verify triangle law of forces using force table
2	To verify law of polygon of forces using force table
3	To verify lami's theorem using force table
4	To verify law of moments using Bell crank lever
5	To calculate support reactions of beam
6	To compute centroid of plain lamina
7	Solve numerical on force system and beam
8	Solve numerical on moment of inertia

Note: All EIGHT experiments should be performed in the laboratory


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Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Basic Civil Engineering	G. K. Hiraskar	Dhanpat Rai	1 st	2008
02	Surveying	N. Basak	Tata Mac Graw Hill	1 st	2008
03	Engineering Mechanics	S. Ramamrutham	Dhanpat Rai	9 th	2010
04	Engineering Mechanics	R.S. Khurmi	S. Chand	Revised	2006
05	Engineering Mechanics	R. K. Bansal and Sanjay Bansal	Laxmi	6 th	2013
06	Engineering Mechanics	K. L. Kumar	Tata McGraw Hill	4 th	2012
07	Engineering Mechanics	S. B. Junnarkar	Charotar	16 th	2011
08	Engineering Mechanics	S.S. Bhavikatti	New Age International Pvt. Ltd.	4 th	2012

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mechanics	Irving H. Shames	Prentice Hall of India, New Delhi	5 th	2011
02	Vector Mechanics for Engineers Vol.-I and II	F. P. Beer and E. R. Johnson	Tata McGraw Hill Education	6 th	2011
03	Engineering Mechanics: Statics & Dynamics	Ferdinand Singer	Harper and Row Publications	9 th	2009
04	Fundamentals of Engineering Mechanics	S. Rajasekaran	Vikas Publishing House Pvt. Ltd.	3 rd	2005
05	Mechanics of Materials	Dr. B.C. Punmia	Laxmi	Reprint	2010

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Class	F. Y. B. Tech. I Semester
Course Code and Course Title	2EEES109 Design Thinking
Prerequisite/s	---
Teaching Scheme: Theory/Tutorial/Practical	01/00/02
Credits	02
Evaluation Scheme: ISE	50

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

2EEES109_1	Apply the design thinking techniques to empathize the customer through arranging survey and/or interviews.
2EEES109_2	Identify and formulate the solution for real world problem using design thinking technique.
2EEES109_3	Create a Prototype for defined problem using design thinking approach.
2EEES109_4	Test developed prototype to meet user's requirements through customer feedback or prototype exhibitions.
2EEES109_5	Adapt ethical practices and professional skills to provide a reliable solution for defined real world problem through participating in team activities.

Syllabus: Design Thinking

Course Contents		Hours
Unit 1	Introduction to Design Thinking, Design Thinking Process	02
Unit 2	Empathize Phase: Empathy and Ethics, User Perspective, Activities – Empathy Map, Planning, Persona building.	02
Unit 3	Customer Journey Mapping, Observation of stakeholders, Defining and Conceptualization of problem	02
Unit 4	Ideation, Activities –5 Whys & I How, Story boarding, Brainstorming.	02
Unit 5	Prototype – Types, Mindsets, Tools.	02
Unit 6	Testing – Scenario, Methods, Refinements & Recommendations.	02

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1	Understanding Design Thinking, Lean, and Agile	Jonny Schneider	O'Reilly	---	2017
2	Introduction to Design Thinking	S.Salivahanan, S.Suresh Kumar, D.Praveen Sam,	Tata Mc Graw Hill,	---	2019
3	Karmic Design Thinking - A Buddhism-Inspired Method to Help Create Human-Centered Products & Services	Prof. Bala Ramadurai,	Self- Published	--	2020
4	Design: Creation of Artifacts in Society	Prof. Karl Ulrich, U. Penn	University of Pennsylvania	--	2011

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Design for How People Think	John Whalen	O'Reilly	---	2019
2	Change by Design	Tim Brown	HarperColli ns	---	2009
3	Creative Confidence: Unleashing the Creative Potential Within Us All	Kelley, D. & Kelley, T	New York: William Collins	---	2014
4	Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days	Jack Knapp and others	Simon & Schuster	---	2009

Other Books/E-material

Sr. No	Title	Instructor	Publisher
01	NPTEL Course- Design Thinking A Primer	Prof. Ashwin Mahalingam & Prof. Bala Ramadurai	www.nptel.ac.in
02	NPTEL Course- Innovation by Design	Dr. B.K. Chakravarthy	www.nptel.ac.in


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List of Experiments

Expt. No	Title of the Experiment
1	Identification and Selection of Problems
2	Designing of Empathy Map
3	Customer Survey and Analysis
4	Persona Building
5	Customer Journey Map
6	Defining the problem
7	Poster Presentation
8	Ideation
9	Prototype Building
10	Testing

Note: All TEN experiments should be performed in the laboratory


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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_A, Badminton
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50


Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_A1	Improve physical fitness.
2EEHS110_A2	Understand the basic rules and how they can play the game of badminton.
2EEHS110_A3	Provide opportunities for playing modified games to promote student learning
2EEHS110_A4	Develop students' critical thinking skills, problem solving skills, self-management skills, collaboration skills, risk assessment etc.
2EEHS110_A5	Learn various technical motor skills in badminton and how you can move better in the court.
2EEHS110_A6	Acquiring a satisfactory level of knowledge and experience of the sport, to enable students to play by themselves for recreation.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction to badminton – Aim – Objectives – Short reference in Badminton history Understand the basic rules and how they should play normal game.	04
Unit 2	Skills - Service, Net shot, Clear, Drop, Smash. Skills - Service Forehand & Backhand, Net shot, Drive (Presentation and practice to the court)	06
Unit 3	Skills – Clear, Drop, Smash Implementation of singles rules	05
Unit 4	Footwork 1 Footwork 2	05
Unit 5	Implementation of doubles rules. Forehand strokes. Motor skills practice 1	06
Unit 6	Motor skills practice 2 Motor skills practice 3 Motor skills practice 4	04


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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_B, Volley Ball
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_B1	To send the ball over the net, according to the regulations, to the ground on the opponent's ground
2EEHS110_B2	The ball is put into play through the service right back player within the service zone
2EEHS110_B3	The Ball must hit with one hand or one arm and directly send over the net opponent's court.
2EEHS110_B4	To valley the ball over the net before it touches on the ground
2EEHS110_B5	The players use their hands to volley the ball.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction & understand basic volleyball rules, terminology, and scoring procedures.	04
Unit 2	Demonstrate basic skills associated with volleyball, including passing, setting, serving, attacking (spiking), and blocking.	06
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 4	Demonstrate an understanding of the typical game sequencing: serve, pass, attack, defense, transition, and defense.	05
Unit 5	Understand and apply the knowledge of basic rules of volleyball. Skill Practice	06
Unit 6	Demonstrate proper etiquette and good sportsmanship. And Skill related Practice. Skill Practice	04


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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_C, Kabaddi
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_C1	Acquire , analyze and interpret basic skills
2EEHS110_C2	Appraise the rules and regulation.
2EEHS110_C3	Demonstrate and assess various basic skills/techniques and game strategies.
2EEHS110_C4	Develops confidence, concentration and tolerance in players.
2EEHS110_C5	This game also Provides an opportunity for healthy competitions among equal players and help them make friends.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction to Kabaddi – Aim – Objectives – Short reference in Kabaddi history Understand the basic rules and how they should play normal game.	04
Unit 2	Demonstrate basic skills associated with Kabaddi, including pushing, Bonus, Tackling, attacking, and blocking	06
Unit 3	Demonstrate an understanding of the typical game sequencing: service, Bonus, attack, defense, Raiding and defense.	05
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies. Stepping Practice.	05
Unit 5	Skill Demo – Stepping, Bonus, Foot touch, Toe touch, Thrust, Squat leg, Kicks & Practice.	06
Unit 6	Skill Practice and Shadow Practice	04

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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_D, Foot Ball
Prerequisite/s	—
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_D1	By applying these principles through active participation, students develop the necessary Skills and knowledge to play football.
2EEHS110_D2	Provides students with opportunities to improve physical fitness acquire knowledge of fitness concepts and practice positive personal and social skills.
2EEHS110_D3	Students will gain an understanding of how a wellness lifestyle affects one's health, fitness and physical performance

Course Contents:

Unit No.	Title	Hours
Unit 1	Introduction to Football – Aim – Objectives – Short reference in Football history Understand the basic rules and how they should play normal game.	04
Unit 2	Introduce students to the basic skills and knowledge associated with football. Understand basic football rules, terminology, and safety concerns.	06
Unit 3	Demonstrate the basic football skills of passing, three-point stance, catching, blocking, hand-offs, punting, the carry and kicking & Practice.	05
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 5	Improve personal fitness through participation in yoga, muscular strength, muscular endurance, and flexibility activities & Practice.	06
Unit 6	Successfully participates in skill improvement and offensive game strategies & Practice	04

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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_E, Bharatnatyam Classical Dance
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_E1	Interpolation of Indian classical dance forms & basic types of Bharatnatyam.
2EEHS110_E2	Subdivide bharatnatyam in terms of Nrutt, Nrutya & Nattya.
2EEHS110_E3	Show the perform base on signal-& combine hand posture in terms of Ganesh Vandana & Mahalaxmi Ashtak

Course Contents:

Unit No.	Title	Hours
Unit 1	History of Bharatnatyam Dance style & information about all Indian classical dance forms.	01
Unit 2	Basic types of Bharatnatyam :- Tatty Advu, Natty advu, Vishru advu, Kuddit Mett advu, Mett advu, tatti kuddit mett advu & Tirmanam (small). Study of Navras Abhinay. Singal Hand posture , Footwork , Shirobhed(head movement),	10
Unit 3	Combine Hand posture. Meaning of Guruvandna, Ganesh, mahalaxmi shlok. Definition of Nrutt, Nrutya & Nattya.	06
Unit 4	Practical session of Ganesh vandna Shlok in classical music.	06
Unit 5	Practice Sessions. & Presentation of Ganesh vandna	06
Unit 6	History of Bharatnatyam Dance style & information about all Indian classical dance forms.	01

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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_F, Harmonium Classical Music
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS110_F1	Outline in History Harmonium & different Raags.
2EEHS110_F2	Perform on different songs
2EEHS110_F3	Role play the different music by means of harmonium.

Course Contents

Unit No.	Title	Hours
Unit 1	History & Introduction of Harmonium.	02
Unit 2	Harmonium presentation of Raag:- Bhoop raag / Bhimpalash raag.	12
Unit 3	Practice sessions.	03
Unit 4	Practice song notations & Harmonium Dhoon (percussion)	08
Unit 5	Practice sessions & students' presentations	05
Unit 6	History & Introduction of Harmonium.	02


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_G, Indian Folk Dance
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:

2EEHS110_G1 **Discuss** different types in Indian Folk dance.

2EEHS110_G2 **Demonstrate** Navras Abhinay, Tribal dance, Dhangari & Lavni dance.

2EEHS110_G3 **Compose** dance on different folk-dance style.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction to Indian Folk dance & its forms.	02
Unit 2	Basic steps of folk-dance styles.	03
Unit 3	Importance of expressions (Acting) in dance, Navras Abhinay & its types. (9 types of navras)	03
Unit 4	Tribal dance, & it's different styles.	06
Unit 5	Practice sessions.	04
Unit 6	History of Dhangari & Lavni dance. Types of dhangari & lavni dance.	01
Unit 7	Steps (dance composition) of Dhangari & Lavni dance.	07
Unit 8	Practice sessions & Students performance	04

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Class	F.Y. B. Tech, Semester.-I
Course Code and Course Title	2EEHS110_H, Karaoke Singing.
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial/ Practical	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:

2EEHS110_H1	Understand notation of the songs.
2EEHS110_H2	Perform happy, sad, love devotional, patriotic songs.
2EEHS110_H3	Compose songs in many variations.

Course Contents

Unit No.	Title	Hours
Unit 1	Song Notation	04
Unit 2	Happy song / Sad song (classical & semi classical)	08
Unit 3	Love song / Devotional song / Patriotic songs	08
Unit 4	Song composition	05
Unit 5	Practice session & students' presentation	05

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Curriculum

First Year B.Tech - Semester – II



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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester -II
Course Code and Course Title	2EEBS111 Applied Mathematics- II
Prerequisite/s	2EEBS101
Teaching Scheme: Lecture/Tutorial/Practical	03/01/00
Credits	04
Evaluation Scheme: ISE/MSE/ESE	40/30/30

Course Outcomes: After successful completion of this course, the students will be able to:

2EEBS111_1	Solve problems on partial derivatives by using fundamental concepts of derivative and apply it to find Jacobian, Maxima and Minima of functions of several variables.
2EEBS111_2	Solve Ordinary Differential Equation by using analytical method and numerical techniques.
2EEBS111_3	Use technique of finite difference and interpolation to compute the value of function for given data
2EEBS111_4	Apply the concept of Special Functions to evaluate improper integrals.
2EEBS111_5	Evaluate proper and improper type of multiple integrals by using fundamental concepts of integration and apply it to find Area and Mass of a given region.

Course Contents		Hours
Unit 1	Partial Differentiation and Its Applications: Function of two or more variables, Partial derivatives, Euler's theorem, Change of variables, Jacobin, Maxima and minima of functions of two variables.	08
Unit 2	Ordinary Differential Equation (First order and First degree): Linear differential equation, Equation reducible to linear differential equation, Exact differential equation, Equation reducible to exact equation, Simple electrical circuits.	07
Unit 3	Numerical Solution of Ordinary Differential Equation (First order and First degree): Picard's method, Taylor's series method, Euler's method, modified Euler's method, Runge-kutta method.	06
Unit 4	Finite Differences and Interpolation: Finite differences, Newton's Interpolation formulae, central difference interpolation formulae (stirling formula), interpolation with unequal interval (Lagrange's formula)	06
Unit 5	Special Functions: Gamma function, Properties of Gamma function, Beta function, Properties of Beta function, Relation between Beta and Gamma functions.	07
Unit 6	Multiple Integral and It's Applications: Double Integrals, Triple integral, Change of Order of Integration, Change to polar, Applications to Area and Mass of plane lamina.	08

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Department of Electrical Engineering

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers	44 th	2018
02	Advanced Engineering Mathematics	N. P. Bali, Manish Goyal	Infinity Science Press	7 th	2010
03	Advanced Engineering Mathematics	H. K. Das	S. Chand	22 nd	2018
04	Numerical Methods in Engineering & Science	Dr. B. SGrewal	Khanna Publishers	9 th	2010

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	A textbook of Applied Mathematics	P.N. Wartikar & J.N. Wartikar	Pune Vidyarthi Griha Prakashan	1 st	2008
02	Higher Engineering Mathematics	B. V. Ramana	TMH	6 th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10 th	2017
04	Numerical Methods	Dr. P. Kandasamy Dr. K. Thilagavathy Dr. K. Gunavathi	S. Chand	1 st	2010

List of Tutorial:

Sr. No.	Title of tutorials
1	Partial Differentiation and homogeneous function
2	Applications of Partial Differentiation
3	Linear and non-differential equation.
4	Exact and non-differential equation and Simple electrical circuits.
5	Numerical Solution of Ordinary Differential Equation
6	Newton's Interpolation formulae: forward and backward difference formulae
7	Central difference interpolation formulae (stirling formula), and Lagrange's interpolation formula.
8	Special functions


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Department of Electrical Engineering

Class	F. Y. B. Tech, Semester - II
Course Code and Course Title	2EEBS112 Applied Physics and Chemistry
Prerequisite/s
Teaching Scheme: Lecture/Tutorial /Practical	04/ 00/00
Credits	04
Evaluation Scheme: ISE/MSE/ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
2EEBS112_1	Apply suitable optical theory to determine wavelength, characteristics and properties of monochromatic and polychromatic sources of light using relevant optical methods of testing.
2EEBS112_2	Calculate the interplaner spacing, lattice constant and properties of unit cell for a given crystal system based on the crystallographic study using laws of material science.
2EEBS112_3	Use concept of Nanotechnology to express Production technique and tools of nano-material using different methods and microscopes
2EEBS112_4	Solve the problems on total hardness of water and calorific values of the fuels by using fundamental equations
2EEBS112_5	Categorize the given fuels on the basis of their characteristic properties and applications by using recent needs of the industries
2EEBS112_6	Select engineering materials on the basis of properties and applications with their chemical composition.

Course Contents		Hours
Applied Physics		
Unit 1	Wave optics and Laser: Diffraction: -Introduction, construction of plane diffraction grating, Diffraction at multiple slits, Determination of wavelength of particular colour using plane diffraction grating, Resolving power of grating, Positive and Negative crystals, Optical activity, Laurent's Half Shade Polarimeter, Numericals. LASER: Introduction to laser, Interaction of radiation with matter- Absorption, Spontaneous emission, Stimulated emission, Pumping- Three level and four level, Population inversion, Metastable state, Laser beam Characteristics, Solid State laser (Ruby Laser), Industrial and medical applications of laser.	10
Unit 2	Structure of Solids and its Characterization: Crystalline state, Lattice, Space lattice, Basis and crystal structure, Unit cell, lattice parameters, Crystal system in brief, (Cubic, Monoclinic, Triclinic), Fourteen Bravais lattices, Properties of unit cell (number of atoms per unit cell, coordination number, atomic radius, packing fraction), Calculation of lattice constant(Relation between lattice constant and density), Symmetry elements in cubic crystal, Miller indices:- Procedure, Features and Sketches for different planes. X-ray diffraction (Laue method), Bragg's law, Bragg's X-ray diffractometer, Numerical.	10

P. Balan
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S. Somnath
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Unit 3	Nano Physics: Introduction, Concept of nanotechnology, Production techniques:- Top-down (eg. Ball milling) and Bottom-up (eg. Sol-gel process), Tools – Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM), Applications of nano- materials, Carbon Nano Tube (CNT).	08
Applied Chemistry		
Unit 4	Water Chemistry: Introduction, impurities in natural water, Water Testing: Total solids, acidity, alkalinity and chlorides, hardness of water (definition, causes and significance), Calculations of total hardness, disadvantages of hard water. Scale and sludge: formation in boilers and removal, Treatment of hard water by ion exchange process, Desalination of brackish water by Reverse Osmosis.	09
Unit 5	Energy Science: Introduction, classification, characteristics of good fuels, comparison between solid, liquid and gaseous fuels, types of calorific value (higher and lower), Bomb calorimeter and Boy's calorimeter. Numerical on Bomb and Boy's calorimeter. Photo catalysis of water for H ₂ generation, introduction to solar cells, biomass energy. Batteries: Introduction, Characteristics of a battery, Rechargeable Li- ion batteries (Diagram, charging-discharging reactions, advantages and applications). Fuel Cells: Introduction, H ₂ -O ₂ Fuel cell (Construction, working and applications), applications of fuel cells.	09
Unit 6	Advanced Materials: Metallic materials: Introduction, alloy definition and classification, purposes of making alloys. Ferrous alloys: Plain carbon steels (mild, medium and high), Nonferrous alloys: Nickel alloy (Nichrome), Aluminum alloy (Duralumin and Alnico), Tin alloy (Solder metal). Polymers: Introduction, plastics, thermo softening and thermosetting plastics, industrially important plastics like phenol formaldehyde, urea formaldehyde. Conducting polymers, biodegradable polymers (preparation, properties and applications). Composites: Introduction, composition, properties and uses of fiber reinforced plastics (FRP) and glass reinforced plastic (GRP).	10


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Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	P. K. Palanisamy	Sci Tech pub. (P) Ltd.	2 nd	2009
02	Engineering Physics	G Vijayakumari	Vikas Pub. House (P) Ltd	3 rd	2009
03	Introduction to Nano science and Nanotechnology:	K.K. Chattopadhyay and A.N. Banerjee,	PHI Learning	3 rd	2009
04	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd., New Delhi.	11 th	2008
05	A Text Book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co. New Delhi.	3 rd	2007

Reference Books

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Physics	Resnick Halliday, Krane,	John Wiley & Sons Pub.	8th	2008
02	Introduction to Solid State Physics	Charles Kittle,	Wiley India Pvt. Ltd	7th	2008
03	Solid State Physics	S. O. Pillai	New Age International	6 th	2007
04	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	15 th	2010
05	Computers and their Applications to Chemistry	Ramesh Kumari	Narosa Publishing House Pvt. Ltd.	2 nd	2005


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Department of Electrical Engineering

Class	F.Y. B. Tech. Semester - II
Course Code and Course Title	2EEPC113 Analog Electronics
Prerequisite/s	2EEPC102
Teaching Scheme: Lecture/Tutorial/Practical	03/00 /00
Credits	03
Evaluation Scheme: ISE/MSE/ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:

2EEPC113_1	Analyze the various solid state device models and its applications
2EEPC113_2	Perform analysis of BJT biasing in DC circuits
2EEPC113_3	Classify feedback amplifiers & analyze various oscillators
2EEPC113_4	Analyse the characteristics and operation of operational amplifier
2EEPC113_5	Apply the knowledge of OP-AMP in several operational amplifier circuit.
2EEPC113_6	Design a timer circuits using IC 555 and Phase Lock Loop circuit using IC566.

Course Contents		Hours
Unit 1	Semiconductor Diode and its Applications Diode, Type of Diodes – p-n junction diode, Zener diode, tunnel diode, photodiode, LED. Applications of rectifier circuits: Half wave rectifier, Full wave rectifier, Bridge rectifier with filters, clipper and clamper. Numerical on rectifier circuits.	08
Unit 2	Bi-polar Junction Transistor & JFETs BJT- Construction, Operation, Configuration of transistor - CB, CE and CC configuration, Load line analysis of BJT, DC biasing analysis, numerical on DC biasing methods. Junction Field Effect Transistors (JFET): Construction, operation and Characteristics of JFETs	08
Unit 3	Feedback Amplifiers and Oscillator Circuits Feedback Amplifiers: Feedback concepts, Barkhausen criterion, classification, Voltage / current series / shunt feedback amplifiers Oscillator Circuits: Operation and analysis of tuned RC phase shift, Hartley, Colpitts and crystal oscillators.	06


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Department of Electrical Engineering

Unit 4	Fundamentals of Operational Amplifier Op-amp basics, IC741 pin configuration, Block diagram of op-amp, Open loop & Feedback modes- Inverting and non-inverting amplifier, Ideal op-amp characteristics-Non ideal characteristics- DC characteristics – Input bias current- Input offset voltage- Input offset current- Thermal drift,	08
Unit 5	Op Amp Applications Comparator, Zero-crossing detector, Summing amplifier, Difference amplifier, Voltage follower, Differentiator, Integrator, V to I converter, I to V converter	06
Unit 6	Timer and Phase Locked Loops Timer Introduction of Timer and its needs, IC 555 Timer: functional diagram, Mono-stable multivibrator, Astable multivibrator Phase Locked Loops Introduction of PLL and its needs, IC 566 PLL: Functional block diagram, Voltage Controlled Oscillator, frequency detection and synthesis	08

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Electronic Devices and Circuit Theory	Robert L. Boylestad and Louis Nashelsky	PHI/Pearson Education	Eleventh	2015
02	Op-amps & Linear Integrated Circuits	Ramakant A. Gayakwad	PHIPublication New Delhi	Fourth	2015
03	Electronic Devices & Circuits	P. Ramesh Babu	Scitech Publication	Third	December 2009
04	Principle of Electronics	V.K. Mehata, Rohit Mehata	S. Chand	Tenth	2006

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Electronic Devices & Circuits	Milliman, Halkias and Satyabratajit.	McGraw Hill Education India	Third	2012
02	Electronic Principles	Albert Malvino and David J Bates,	Tata McGraw Hill	Seventh	2014
03	Electronic Devices and circuits	Allen Mottershead	PHI publication	First	1979
04	Operational amplifiers and linear ICs	David A Bell	Oxford University Press	Third	2011


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Department of Electrical Engineering

Class	F.Y.B. Tech, Semester - II
Course Code and Course Title	2EES114 Engineering Graphics
Teaching Scheme: Lecture/Tutorial	02/00/00
Credits	02
Evaluation Scheme: ISE/MSE/ESE	40/30/30

Course Outcomes (COs):

After successful completion of this course, the student will be able to:

2EES114_1	Sketch projection of simple geometries [point, line, planes]
2EES114_2	Sketch projection of solids inclined to reference plane
2EES114_3	Prepare sectional view of solids.
2EES114_4	Produce the isometric projection.
2EES114_5	Produce the orthographic projection.

Course Contents:

		Hours
Unit 1	Fundamental of engineering graphics: Introduction to drawing instrument and their uses. Different types of lines used in drawing practice, the dimensioning system as per BSI. Projection of lines: Introduction to First angle and third angle methods of projection. Projections of points on regular and auxiliary reference planes. Projections of lines (horizontal, frontal, oblique and Profile lines) on regular and auxiliary reference planes. The true length of a line, Point View of a line, angles made by the line with reference planes. Projections of intersecting lines, Parallel lines, perpendicular lines, and skew lines, grade and bearing of a line.	06
Unit 2	Projection of plane: Projections on regular and on auxiliary reference planes. Types of planes (horizontal, frontal, oblique and Profile planes), Edge view and True shape of a Plane. Angles made by the plane with Principle reference planes. Projection of plane figure inclined to both the plane. (Circle and regular polygon).	04
Unit 3	Projection of solid: Projection of solids such as Prisms, Pyramids, Cylinder and Cones inclined to both reference plane (excluding frustum and sphere).	04
Unit 4	Sections of solids: Prisms, Pyramids, Cylinders and Cones, in simple positions and inclined to one reference plane and parallel to others.	06
Unit 5	Orthographic projection-I: Lines used, selection of views, the spacing of views, dimensioning and section. Drawing required views from given pictorial views (conversion of pictorial views into orthographic views). Including sectional orthographic views	04
Unit 6	Isometric projection: Introduction to Isometric. Isometric scale, Isometric projections, and Isometric views / drawings. Circles in isometric view. Isometric views of simple solids and objects.	04


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Department of Electrical Engineering

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing	N D Batt & V M Panchal	Charotar Publication House Bombay	50 th	2010
02	Engineering Drawing	Dhananjay A Jhole	Tata Mc-Graw Hill	5 th	2011
03	Fundamentals of Engineering Drawing	Warren. J. Luzadder	Prentice-Hall of India.	11 th	1999
04	Engineering Drawing	P S Gill	Katson books	9 th	2012

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing & Graphics	K. Venugopal	New Age	5 th	2012
02	Engineering Drawing	M. B. Shaha and B. C. Rana	Pearson	2 nd	2012
03	ABC's of Auto CAD	George Omura	BPB	-	1999
04	Engineering graphic with Auto CAD 2002	Bethune	Pearson	-	2012


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester - II
Course Code and Course Title	2EEVS115 Object Oriented Programming
Prerequisite/s	2EES105
Teaching Scheme: Theory/Tutorial/Practical	01/00/02
Credits	02
Evaluation Scheme: ISE/ESE	50/50

Course Outcomes: After successful completion of this course the students will be able to,	
2EEVS115_1	Explain the fundamental concepts of OOP using real life examples.
2EEVS115_2	Develop a solution for the given problem using the concepts like class, object, array & pointers
2EEVS115_3	Develop a solution for the given problem using the concepts like inheritance and polymorphism
2EEVS115_4	Build an application to solve real world problem statements by making use of various library utilities and stream classes
2EEVS115_5	Communicate effectively to present the results or solutions, both orally and in writing
2EEVS115_6	Adapt professional and ethical principles to solve given problem during practical performance and during implementation of micro project

Course Contents		Hours
Unit 1	Fundamentals of Object-Oriented Programming: The Origins of C++, key words, Abstraction, Encapsulation, Polymorphism, Inheritance.	02
Unit 2	Classes & Objects: Relation of Classes and objects, Friend Functions, Friend Classes, Inline Functions, Constructors and Destructors, Parametrized Constructors, Scope resolution operators.	02
Unit 3	Arrays & Pointers: Arrays, Pointers, Arrays of objects, Pointers to objects, This Pointer. Dynamic Memory Allocation Operators: Introduction to new & delete operators. Function Overloading, Copy Constructors, Operator Overloading and Operator overloading using friend function.	03
Unit 4	Inheritance: Single Inheritance, Multilevel inheritance, Multiple inheritance, Hierarchical inheritance. Hybrid inheritance.	02
Unit 5	Polymorphism- Virtual base classes, Virtual functions, Pure virtual function, Abstract classes, Early vs Late binding.	03
Unit 6	File and Streams: Overview of C++ Stream classes, Read File using stream classes, Write into file using stream classes.	02


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Department of Electrical Engineering

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Programming with C++	E Balagurusammy	TMGH	4 th	2010
02	The Complete Reference: C++	Herbert Schildt,	TMGH	4 th	2010
03	Object Oriented Programming in Turbo C++	Robert Lafore	Galgotia	4 th	2010
04	Programming with C++	D. Ravichandran,	TMGH	3 rd	2011

Reference Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	C++ Programming with language	Bjarne Stroustrup	AT & T	4 th	2013
02	C++ Programming	John Thomas	PHI	2 nd	1992
03	Object oriented programming in C++	Rajesh K Shukla	Wiley	1 st	2008
04	Test your C++ Skills	Yashwant	BPB	1 st	2010

List of Laboratory Experiments

Expt. No.	Title of Experiment
1	Implement student grading system using class and object concept in C++.
2	Implement concept of function overloading
3	Implement concept constructor overloading
4	Implement program for Operator Overloading
5	Implement Single level and Multilevel inheritance concept.
6	Implement Multiple inheritance concept
7	Implement concept of Hierarchical inheritance
8	Implement concept of Hybrid Inheritance.
9	Implement program for Friend Function.
10	Implement program for Friend Class.
11	Implement Virtual Function concept in C++
12	Implement Virtual Class concept in C++
13	Implement program for File Handling. (Read Write Operations)

Note: Minimum TEN experiments should be performed from the above list


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Department of Electrical Engineering

Class	F. Y. B. Tech, Semester - II
Course Code and Course Title	2EEBS116 Applied Physics and Chemistry Laboratory
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes: The students will be able to,

2EEBS116_1	Apply suitable optical theory to calculate wavelength and divergence of monochromatic and polychromatic sources of light using plane diffraction grating.
2EEBS116_2	Calculate band gap energy and Specific rotation for a given semiconductor and sugar solution using appropriate theories and formulae.
2EEBS116_3	Determine quality of a given water sample accurately on the basis of its hardness, alkalinity, chloride contents by use of principles of volumetric analysis and participate during laboratory.
2EEBS116_4	Analyze given materials accurately for choosing them in domestic and industrial applications with the help of various instruments
2EEBS116_5	Communicate effectively about laboratory work both orally and writing
2EEBS116_6	Practice professional and ethical behavior to carry forward in their life

List of Experiments

Expt. No	Title of the Experiment
1	Plane Diffraction Grating
2	Laurent's Half Shade Polarimeter
3	Wavelength of LASER
4	Divergence of The LASER Beam
5	Seven Crystal System
6	Inverse Square law
7	Determination of alkalinity of water (Acid- Base Titration).
8	Determination of chloride content of water by Mohr's method. (Precipitation Titration)
9	Determination of total hardness of water by EDTA method (Complexometric Titration)
10	Preparation of urea formaldehyde resin
11	Determination of pH of sample solution.
12	Demonstration of H ₂ -O ₂ fuel cell/ battery.

Note: Minimum TEN experiments should be performed from the above list


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Department of Electrical Engineering

Text Books

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Engineering Physics	P. K. Palanisamy	Sci Tech Pub. (P) Ltd.	2 nd	2009
2	Engineering Physics	G Vijayakumari	Vikas Pub. House (P) Ltd	3 rd	2009
3	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd.	11 th	2008
4	A Text Book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co.	3 rd	2007

Reference Books

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1	Solid State Physics:	S. O. Pillai	New Age International	6 th	2007
2	Materials Science and Engineering –	V. Raghvan	PHI Learning.	5 th	2006
3	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	16 th	2015
4	Industrial Chemistry	B. K. Sharma	Goel publication (P) Ltd.	10 th	1999


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Department of Electrical Engineering

Class	F. Y. B. Tech, Semester - II
Course Code and Course Title	2EEPC117 Analog Electronics Laboratory
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes: Upon successful completion of this course, the students will be able to

2EEPC117_1	Select suitable semiconductor device for particular application
2EEPC117_2	Plot various characteristic of semiconductor devices.
2EEPC117_3	Simulate various electronic circuits using MATLAB
2EEPC117_4	Demonstrate operation of Semiconductor devices
2EEPC117_5	Work in groups for performing practices in analog electronics laboratory.

LIST OF EXPERIMENTS

Expt. No	Title of the Experiment
1	Plot V-I characteristics of p-n junction diode (1N4007)
2	Design and test half wave and full wave rectifier with & without C filter
3	Design, assemble and test the wave shaping circuit using diode- clipping circuits
4	Design, assemble and test the wave shaping circuit using diode- clamping circuits
5	Determine the performance characteristics of BJT using DC biasing analysis of CE on hardware or on proteus.
6	Obtain drain and transfer characteristics of JFET
7	Analysis of OP-AMP as inverting amplifier in closed loop configuration on software tool
8	Analysis of OP-AMP as non-inverting amplifier in closed loop configuration on software tool
9	Analysis and application of active circuits using OP-AMP: Summing amplifier and subtractor on software tool
10	Analysis and application of active circuits using OP-AMP: Zero crossing detector on software tool
11	Analysis and Application of active circuits using OP-AMP: Differentiator, Integrator on software tool
12	Operate timer IC 555 / 556 as i. Monostable, ii. Astable mutivibrator

Note: Minimum TEN experiments should be performed from the above list


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Department of Electrical Engineering

Class	F.Y.B. Tech, Semester - II
Course Code and Course Title	2EES118 Engineering Graphics Laboratory
Teaching Scheme: Lecture/Tutorial / Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

After successful completion of this course, the student will be able to:

2EES118_1	Draw the projections of different lines, planes
2EES118_2	Draw different views of solids having axis inclined to reference planes.
2EES118_3	Prepare sectional views of solid cut by cutting plane in different positions
2EES118_4	Produce Isometric drawing of simple objects.
2EES118_5	Prepare Sectional Orthographic views of simple objects.

Expt. No.	Title of Experiment	Optional / Compulsory	Planned week
1.	Projection of Straight lines	Compulsory	1 st & 2 nd
2.	Projection of Planes	Compulsory	3 rd & 4 th
3.	Projection of Solids	Compulsory	5 th & 6 th
4.	Sections of Solids	Compulsory	7 th & 8 th
5.	Orthographic projections	Compulsory	9 th & 10 th
6.	Isometric projections	Compulsory	11 th & 12 th



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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_A, Table -Tennis
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_A1	The students define table tennis game.
2EEHS119_A2	Willingly participates in Table Tennis as a component of an active lifestyle.
2EEHS119_A3	The students explain foot- work in forehand and backhand spin.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction & Understand basic Table Tennis rules, terminology, safety concerns, and scoring procedures.	04
Unit 2	Demonstrate proper court etiquette and good sportsmanship.	06
Unit 3	Demonstrate basic skills associated with table tennis including forehand, backhand, spins, grips & serves.	05
Unit 4	Demonstrate Exposition and Applying forehand and backhand straight strike.	05
Unit 5	Assess current personal fitness levels & Practice.	06
Unit 6	Use a variety of stroke placements to keep opponent moving during a table tennis match. Practice.	04


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_B, Kho-Kho
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00/ 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
2EEHS119_B1	Helps in Motor Development.
2EEHS119_B2	It helps in social and mental development of the student
2EEHS119_B3	Kho-Kho helps the student to off depression, anxiety, stress and, increase self-esteem.
2EEHS119_B4	It develops team spirit and leadership skill.
2EEHS119_B5	It improves physical fitness.

Course Contents		
Unit No.	Title	Hours
Unit 1	Introduction to Kho-Kho – Aim – Objectives – Short reference in Kho-Kho history Understand the basic rules and how they should play normal game.	04
Unit 2	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. Chasing Skills- a) Giving Kho b) Taking Direction c) Sudden Change d) Tapping	06
Unit 3	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. Chasing Skills-e) Turning Round the Post f) Trapping g) Diving h) Fake Kho i) Late kho & Practice.	05
Unit 4	Demonstrate basic skills associated with Kho-Kho, including Running Skills a) Position on the court b) Avoiding Trapping c) Positioning near post d) Dodging	05
Unit 5	Demonstrate basic skills associated with Kho-Kho, including Running Skills a) Front Dodge b) Back Dodge c) Round the post dodge & Practice	06
Unit 6	Kho-Kho Skills Practice & Matches.	04


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_C, Basket Ball
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_C1	Introduce students to the basic skills and knowledge associated with basketball.
2EEHS119_C2	By applying these principles through active participation, students develop the necessary skills and knowledge to play basketball
2EEHS119_C3	Provides students with opportunities to improve physical fitness, acquire knowledge of fitness concepts and practice positive personal and social skills
2EEHS119_C4	Students will gain an understanding of how a wellness lifestyle affects one's health, fitness and physical performance.

Course Contents

Unit No.	Title	Hours
Unit 1	Introduction & Understand basic basketball rules, terminology, and safety concerns.	04
Unit 2	Demonstrate the six basic basketball skills of a) Running b) Jumping c) Passing d) catching e) Dribbling and f) Shooting.	06
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	05
Unit 4	Understand and apply the knowledge of basic rules of basketball. Skills Practice.	05
Unit 5	Demonstrate proper etiquette and good sportsmanship. Successfully participates in skill improvement and offensive game strategies.	06
Unit 6	Identify and apply injury prevention principles related to aerobic activities. Practice & Matches.	04


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_D, Hand Ball
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_D1	The student has a basic knowledge of the team values of sports games
2EEHS119_D2	Acquainting with the characteristics and trends in the development of the discipline.

Course Contents:

Unit No.	Title	Hours
Unit 1	Introduction & Understand basic Handball rules, terminology, and safety concerns.	04
Unit 2	Health and safety rules. Rules for obtaining credit for the course, Reminder of the history, methodology and basic rules of the game, Exercises to improve passing, grips and throws. The game. Reminder of the refereeing rules.	06
Unit 3	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use	05
Unit 4	Exercises improving feints and individual defense technique. Everyone's defense system. Principles of individual defense & Practice.	05
Unit 5	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use. The game & Practice.	06
Unit 6	Identify and apply injury prevention principles related to aerobic activities, Practice & Matches	04


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_E, Katthak Classical Dance
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_E1	Explain Importance of katthak with respect to Indian culture.
2EEHS119_E2	Demonstrate Guruvandana, Tatkar.
2EEHS119_E3	Compose Katthak dance with consideration of classical & semi classical music.

Course Contents:

Unit No.	Title	Hours
Unit 1	Introduction to Classical dance katthak & its importance.	01
Unit 2	Guruvandana & Tatkaar. (teen taal)	03
Unit 3	Chakri & Hast-sanchalan	03
Unit 4	Tode. (Tigida-tigdig-thai)	03
Unit 5	Practice sessions.	02
Unit 6	Paran & Tihaei	05
Unit 7	Classical dance on Song	05
Unit 8	Practice sessions.	08



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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_F, Tabla Classical instruments
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_F1	Discover History of table wadan.
2EEHS119_F2	Demonstration of different Taal in table wadan.
2EEHS119_F3	Develop notation on new music with help of table wadan.

Course Contents

Unit No.	Title	Hours
Unit 1	History & Introduction to Tabla Wadan.	01
Unit 2	Tabla presentation of Taal. Tritaal/ Dadra/ Zaptaal/ Kerwa/ Bhajni	05
Unit 3	Practice sessions.	06
Unit 4	Practice with notation, & Set one song with tabla	08
Unit 5	Practice sessions & students' presentations.	10

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An Autonomous Institute

Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_G, Western Dance
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	00 / 00 / 02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_G	Describe History of Western dance & basic of western dance.
2EEHS119_G	Organize western dance individually as well as group with help of western music.
2EEHS119_G	Compose western dance on songs.

Course Contents:

Unit No.	Title	Hours
Unit 1	History of Western dance style & information about western dance.	02
Unit 2	Basic types of western dance: - worm-up, Hand- legs movements.	04
Unit 3	Teaching Basic style (focus on dance / music / movements, how to control body, emotion/feeling of music/ dance.)	06
Unit 4	Training western dance with music (original dance form of western, free style dance)	08
Unit 5	Dance composition.	05
Unit 6	Practice session, & Students Presentation	05


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Department of Electrical Engineering

Class	F.Y. B. Tech, Semester.-II
Course Code and Course Title	2EEHS119_H, Yoga
Prerequisite/s	-----
Teaching Scheme: Lecture/Tutorial	02 / 00 / 00
Credits	00
Evaluation Scheme: ISE-1/MSE/ ISE-II /ESE	Audit

Course Outcomes (COs):

Upon successful completion of this course, the student will be able to:

2EEHS119_H1	Discuss importance of Yoga with respect to different forms of exercise.
2EEHS119_H2	Perform Different styles of Yoga.

Course Contents:

Unit No.	Title	Hours
Unit 1	Introduction, importance of yoga, Basic exercise, sun salutation, shavasana taught yogic & excises types	06
Unit 2	Omkar & sleeping position seats (aasn yogic excise type) to teach omkar in a scientific way, to teach mercatasan, makrasan, setubandhan,	04
Unit 3	Opposite sleeping position. Shalabhasan, chakras an, Bhungasan, Makrasan.Pranayam;- Anulom-Vilom,,Bhasarika, Sheetkari, Bhramari, shitali pranayam. Rapid respiration (jalad shwasan)	05
Unit 4	Practice sessions	05
Unit 5	Seats in the sitting position: - padmasan, Wajrasan, Wakrasan, Ardh-machindrasana, Urshtrasan.	04
Unit 6	Seats in Fine Position. (Dand stithi): - Ekpaad vrukrashasan, Veerasan, Patangasan, Trikonasan.	06


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Executive Director