Key Indicator- 2.6 Student Performance and Learning Outcome

2.6.1.	**Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.**

DINKARRAO K. SHINDE SMARAK TRUST'S
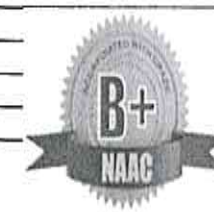
DR.A.D.SHINDE COLLEGE OF ENGINEERING,GADHINGLAJ
Guddai, A/P- Bhadgaon, Tal. Gadhinglaj, Dist. Kolhapur.
National Assessment and Accreditation Council (NAAC)
Key Indicator - 2.6.1
Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.
Academic Year: 2024-25
Program: Department of General Science and Humanities

SEM:01

SR.NO	SUBJECT	co no	Course Outcomes (COs)
1	ENGINEERING CHEMISTRY	BSC-C-1011	1:Student will be able to undestand the properties of metallic and advanced material.s.
		BSC-C-1012	2.Student will be able to understand tuse of for chemical analysi
		BSC-C-1013	3.Student will be able to undestand water treatment process to solve engineering problem
		BSC-C-1014	4.Student will be able to undestand types of fuels and their properties and application
		BSC-C-1015	5.Student will be able to undestand to various types of corossion mechanism and prevension method
		BSC-C-1016	6.Student will be able to understant various types of polymers in engineering fieldent will be able to undestand & comprehend to water quality parameters & there importance

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3								1	1		1
CO2	3	2							1	1		1
CO3	2	3							1	1		2
CO4	2	2							1	1		1
CO5	2								1	1		1
CO6	2								1	1		1

SR.NO	SUBJECT	co no	Course Outcomes (COs)
2	ENGINEERING MATHAMATICS-I	BSC-M-I-1021	1.Calculate roots of complex numbers, separation into real and imaginary parts of complex numbers by using De Moivre's Theorem.
		BSC-M-I-1022	2.Student will be able to Apply Taylor's and Maclaurin's series to find expansion of functions
		BSC-M-I-1023	3. Student will be able to Find partial derivatives and use it to find Maxima and minima, Jacobian.
		BSC-M-I-1025	5.Student will be able to Calculate Eigen values and eigen vectors of matrix and higher powers of matrix using
		BSC-M-I-1026	6.Student will be able to Solve linear simultaneous equations by using numerical methods.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2					1			2
CO2	3	3	2	2					1			2
CO3	3	3	2	2					1			2
CO5	3	3	2	2	2				1			2
CO6	3	3	2	2	3				1			2

SEM:01

SR.NO	SUBJECT	co no	Course Outcomes (COs)
3	Basic Electronics Engineering	ESC-C-1031	1.Understand the fundamental concepts of semiconductor materials, diodes, and their characteristics.
		ESC-C-1032	2.Analyze and design rectifier circuits and filters for power supply applications.
		ESC-C-1033	3.Understand the principles of Bipolar Junction Transistors (BJTs), their configurations, and biasing techniques.
		ESC-C-1034	4.Design and analyze small-signal amplifiers and understand amplifier coupling methods.
		ESC-C-1035	5.Understand the principles and applications of operational amplifiers (Op-Amps).
		ESC-C-1036	6.Develop a strong foundation in digital electronics, including logic gates, Boolean algebra, and combinational l
		ESC-C-1037	7.Ability to describe the behavior of special purpose diodes.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2			3				2	2		
CO2	3	2			3				2	2		
CO3	3	2			3				2	2		
CO4	3	2			3				2	2		
CO5	3	2			3				2	2		
CO6	3	2			3				2	2		

SEM:01

SR.NO	SUBJECT	co no	Course Outcomes (COs)
4	Engineering MECHANICS	ESC-C-1041	1.Identify and explain different types of force systems and
		ESC-C-1042	2.Analyze and draw the Free body diagram of objects and
		ESC-C-1043	moment of inertia, and mass moment of inertia for
		ESC-C-1044	problems of rectilinear and projectile motions in
		ESC-C-1045	D'Alembert's principles to solve problems related in
		ESC-C-1046	properties of materials

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3								1	1		1
CO2	3	2							1	1		1
CO3	3	2							1	1		2
CO4	3	2							1	1		1
CO5	3	2							1	1		1
CO6	3								1	1		1

SEM:01

CO-PO Mapping

SEM:01 (continued)

SR.NO	SUBJECT	co no	Course Outcomes (COs)
5	BASIC MECHANICAL ENGINEERING	ESC-C-1051	1.Understand the basic concepts of thermodynamics and I.C. Engine
		ESC-C-1052	2.Understand principle of energy conversion system and power plants
		ESC-C-1053	3.Understand and identify power transmission devices with their functions
		ESC-C-1054	4.Identify and elaborate different mechanisms and mobility systems
		ESC-C-1055	5.Identify and elaborate different manufacturing process
		ESC-C-1056	6.Describe the scope of mechanical engineering in multidisciplinary industries

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3								1	1		1
CO2	3							2	1	1		1
CO3	3	2							1	1		1
CO4	3								1	1		1
CO5	3								1	1		1
CO6	3								1	1		1

SEM:01

SR.NO	SUBJECT	co no	Course Outcomes (COs)
6	PROFFESIONAL COMUNNICATION I	HM-I-1061	1.Communicate effectively in various formal & informal situtions minimizing the barriers
		HM-I-1062	2. Construct grammatically correct sentences and use contextual words in English
		HM-I-1063	3. Use phonetically transcripction to pronounce words correctly
		HM-I-1064	4. Use diffrent formats of formal written skills

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1								2	3		
CO2	1								2	3		
CO3	1								2	3		
CO4	1								2	3		

SEM:01

SR.NO	SUBJECT	co no	Course Outcomes (COs)
7	Programming Language Lab	ESC-W-I-1071	1.Understand basic Programming Concepts.
		ESC-W-I-1072	2. Design C Programs using various Operators.
		ESC-W-I-1073	3. Apply programming logic using Conditional and Looping statements in C.
		ESC-W-I-1074	4. Understand fundamentals of Arrays and Strings in C.
		ESC-W-I-1075	5.Understand and implement the elements of user-defined functions

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1			1							2
CO2	3	2	2		1							2
CO3	3	3	2		2							2
CO4	2	2	2		2							2
CO5	1	3	3		2							2

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
8	ENGINEERING PHYSICS	BSC-P-1011	1.Students will be able to understand the concepts of diffraction and polarization for engineering applications.
		BSC-P-1012	2. Students will be able to understand the basics of lasers and optical fibers and their use in some application
		BSC-P-1013	3.Apply the basic requirement of acoustically good hall and solve problems on sabine's formula
		BSC-P-1014	4.Students will be able to understand Apply the knowledge of wave Mechanics to solve related problem
		BSC-P-1015	5.Students will be able to understand crystal systems and the relationship between various structural parameters.
		BSC-P-1016	6.Students will be able to understand and comprehend synthesis of nanomaterials and their properties

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2							2	2		
CO2	3	2							2	2		
CO3	3	2	1						2	2		
CO4	3	2							2	2		
CO5	3	2							2	2		
CO6	3	2							2	2		

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
9	ENGINEERING MATHAMATICS II	BSC-M-II-2021	1.Solve ordinary differential equations of first order and first degree
		BSC-M-II-2022	2.Apply ordinary diferential equation of first order and first degree to solve simple electric circuit problems,
		BSC-M-II-2023	3.Solve ordinary differential equations of first order and first degree numerically
		BSC-M-II-2024	4.Find numerical solution of Algebraic and Transcndental equations
		BSC-M-II-2025	5.Evaluate definite integrals by using special functions
		BSC-M-II-2026	6.Evaluate double integral and use it to find area enclosed by plane curves, mass of lamina

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2							1	1		
CO2	3	2							1	1		
CO3	3	2							1	1		
CO4	3	2							1	1		
CO5	3	2							1	1		
CO6	3	2							1	1		

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
10	BASIC ELECTRICAL ENGINEERING	ESC-P-2031	1.Apply Ohm's Law, Kirchhoff's Voltage Law (KVL), and Kirchhoff's Current Law (KCL) to analyze and solve simple DC circuits, calculating key parameters such as current, voltage, resistance, and power.
		ESC-P-2032	2 .Understand the principles of magnetic circuits and use concepts such as magnetomotiveforce (MMF),
		ESC-P-2033	3.Analyze and solve single-phase AC circuits involving resistive, inductive, and capacitive components to calcu
		ESC-P-2034	4.Analyze balanced three-phase AC circuits to calculate line and phase voltages, currents, and total power, and
		ESC-P-2035	5.Understand the operation, characteristics, and applications of electrical machines such as DC motors,
		ESC-P-2036	6. Understand the importance of proper earthing for safety and the operation of electrical systems, and analyze

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										
CO2	3	3		2								
CO3	3	3							1	2		
CO4	3	1							1	2	1	
CO5	3	3			1				3	2	2	
CO6	3	3							2	2	1	

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
11	BASIC CIVIL ENGINEERING	ESC-P-2041	1.Explain the role of Civil Engineers in infrastructure development.
		ESC-P-2042	2.Identify and explain the various building components, construction materials and services.
		ESC-P-2043	3.Apply the linear, angular measurement and levelling techniques
		ESC-P-2044	4.Explain the components and need of water supply, drainage and hydraulic systems.
		ESC-P-2045	5.Describe the modes of transport, types and structure of road.

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2				2	3					2
CO2	3	3	3	2			3				2	
CO3	3	2		2		2	3					
CO4	2					3	3	2				
CO5	2						3	2				

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
12	ENGINEERING GRAPHICS	ESC-P-2051	1.Students able to Draw the neat drawings of Engineering Curves
		ESC-P-2052	2. Students able to Understand the Projection of Point, Straight lines, Plane.
		ESC-P-2053	3.Students able to Understand the Projection of Solids.
		ESC-P-2054	4.Students able to convert isometric view to Orthographic VIEW.
		ESC-P-2055	5. Students able to Construct Isometric Drawings FROM THE GIVEN ORTHOGRAPHIC VIEWS
		ESC-P-2056	6.Students able to Develop lateral surfaces of solid cut sections and their projections

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3				2				1			1
CO2	3				2				1			1
CO3	3				2				1			1
CO4	3				2				1			1
CO5	3				2				1			1
CO6	3				2				1			1

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
13	Skill Enhancement I	ESC-W-II-2071	1.Understand the electrical tools and equipment's/components
		ESC-W-II-2072	2.Utilize the know-how of basic electrical concepts in wiring installation

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1										1
CO2	2											1

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
14	Skill Enhancement II	ESC-W-II-2071	1.Understand the electrical tools and equipment's/components
		ESC-W-II-2072	2.Utilize the know-how of basic electrical concepts in wiring installation

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1										1
CO2	2											1

SEM:02

SR.NO	SUBJECT	co no	Course Outcomes (COs)
15	PROFFESIONAL COMUNNICATION II	HM-II -2061	1.Communicate effectively in various formal & informal situations minimizing the barriers
		HM-II -2062	2. Construct grammatically correct sentences and use contextual words in English
		HM-II -2063	3. Use phonetically transcripction to pronounce words correctly
		HM-II -2064	4. Use diffrent formats of formal written skills

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1								2	3		
CO2	1								2	3		
CO3	1								2	3		
CO4	1								2	3		

SR.NO	SUBJECT	co no	Course Outcomes (COs)
16	Programming Language Lab-II	ESC-W-I-1071	1.Understand basic Programming Concepts.
		ESC-W-I-1072	2. Design C Programs using various Operators.
		ESC-W-I-1073	3. Apply programming logic using Conditional and Looping statements in C.
		ESC-W-I-1074	4. Understand fundamentals of Arrays and Strings in C
		ESC-W-I-1075	5.Understand and implement the elements of user-defined functions

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1			1							2
CO2	3	2	2		1							2
CO3	3	3	2		2							2
CO4	2	2	2		2							2
CO5	1	3	3		2							2

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National Assessment and Accreditation Council (NAAC)
Key Indicator - 2.6.1 Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.

Academic Year: 2024-25

Program: DEPARTMENT OF MECHANICAL ENGINEERING

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
1	M-III	ME211.01	1) SolveLinear Differential Equations with constant coefficients.
		ME211.02	2) Describe the statistical data numerically by using Lines of regression and Curve fittings.
		ME211.03	3) Find Laplace transforms of given functions and use it to solve linear differential equations
		ME211.04	fields.
		ME211.05	5)Develop Fourier series expansion of a function over the given interval.
		ME211.06	6)Make use ofPartial Differential Equation to solve the Mechanical Engineering problems

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	1	1						3	3		
CO2	3	3	2	1	1						3	3		
CO3	3	3	2	1	1						3	3		
CO4	3		2	1	1						3	3		
CO5	3	3	2	1	1						3	3		
CO6	3	3	2	1	1						3	3		

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
2	ELECTRICAL TECHNOLOGY	ME212.01	student will be able to Deals the principles of Electrical Engineering
		ME212.02	student will be able to Understands the theoretical and practical's concepts of Electric motors
		ME212.03	student will be able to Apply Electrical heating methods for Industrial furnaces.
		ME212.04	student will be able to Identify and select suitable types of motors and drives
		ME212.05	student will be able to Design various speed control techniques for Electric motors.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2						2			2	3	1
CO2	2	2					2					1	2	1
CO3	3	3							2			3	3	2
CO4	3	3							2			2	2	2
CO5	3								3			2	3	1

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
3	APPLIED THERMODYNAMICS	ME213.01	Understand and apply the fundamental laws of thermodynamics.
		ME213.02	Understand and solve the introductory problems on vapour cycles.
		ME213.03	Understand the principles of working of condensers, types, performance evaluation and methods.
		ME213.04	Apply thermodynamics principles to steam nozzles and determine the performance parameters.
		ME213.05	Apply thermodynamics principles to impulse turbines and determine the performance parameters.
		ME213.06	Apply thermodynamics principles to reaction turbines and determine the performance parameters.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2							2	2		2		
CO2	3	3							2	2		2		
CO3	3	2							2	2		2		1
CO4	3	2							3	2		2		2
CO5	3	2							3	2		2		2
CO6	3	2							3	2		2		2

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
4	METALLURGY	ME214.01	Understand basic concept of metal structure.
		ME214.02	Understand Fe- Fe3C equilibrium diagram and Selection of Metals and Alloys for different application
		ME214.03	Understand the destructive and non- destructive testing methods.
		ME214.04	Understand need & principles of Heat treatment.
		ME214.05	Understand the various heat treatment processes.
		ME214.06	Understand Powder metallurgy technology & industrial practices.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								2	2		2		
CO2	3								2	2		2		
CO3	3		2				2		2	2		2		
CO4	3						2		2			2		
CO5	3								2	2		2		
CO6	3						2			2		2		

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
5	FLUIDMECHANICS	ME215.O1	Understand properties of fluids and classification of fluid flows
		ME215.02	kinematics and fluid dynamics
		ME215.03	Equation and momentum equation for different fluid flow applications
		ME215.04	Make basic analysis of laminar flow to calculate resistance to it through circular pipe
		ME215.05	Calculate different losses in fluid flow through different arrangements of pipes
		ME215.06	Apply theory of boundary layer, Drag and lift forces in proper cases

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								2			1	2	
CO2	3	2							1				2	
CO3	3								2	2	2			
CO4	3					2			1	2				2
CO5	3	3							2	2	2			2
CO6	3	2							2					2

SEM:03

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
6	MACHINE DRAWING	ME216.01	Use BIS conventions in machine drawings.
		ME216.02	Find line/curve of intersection between two solids
		ME216.03	Sketch the various machine components.
		ME216.04	Read and interpret the given production drawings.
		ME216.05	Understand significance of assembly and detail drawings.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2				2							2		
CO2	2				2							2		
CO3	2				2							2		
CO4	2				2							2		
CO5	2				2							2		

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME216.06	Details and Assembly Drawing (CO6)	2				2							2		

SEM:03

7 — Computer Programming Using C++

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME217.01 (CO1)	To understand how C++ improves C with object-oriented features.	3	2	2								2	2	1	2
ME217.02 (CO2)	control structures.	2											3	2	
ME217.03 (CO3)	Design programs involving decision control statements, loop control statements and case control structures.	3	1	2								2	2	1	2
ME217.04 (CO4)	Develop algorithms for solving problems using object oriented language.	1		2									1	2	
ME217.05 (CO5)	field of Mechanical Engineering.	3	2									2	2	2	

SEM:03

8 — WORKSHOP PRACTICE III

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME218.01 (CO1)	Understand types of Patterns, Core boxes and Preparation of Pattern for solid casting.	2								2					
ME218.02 (CO2)	strength.	3								2					
ME218.03 (CO3)	Understand gating system for metal casting with casting defects	3								2					

SEM:03

9 — ENVIRONMENTAL STUDIES

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME219.01 (CO1)	UNDERSTANDING OF ISSUES RELATED TO ENVIRONMENT AND THEIR IMPACT ON THE HUMAN LIFE.	3	3	2			3			2			3		
ME219.02 (CO2)	UNDERSTANDING ON THE SOLUTIONS RELATED TO THE ENVIRONMENTAL PROBLEMS.	3	2				2		2		2	2	3		
ME219.03 (CO3)	DEVELOPMENT.	2	3	1						2			1		
ME219.04 (CO4)	STUDENT WILL BE ABLE TO COMPREHEND THE IMPORTANCE OF ECOSYSTEM AND BIODIVERSITY	3		2			2		2			2	1		
ME219.05 (CO5)	DEVELOP THE AWARENESS ABOUT HIS/HER ROLE TOWARDS ENVIRONMENTAL PROTECTION AND PREVENTION	2	2	1						2			3		
ME215.06 (CO6)	IDENTIFY DIFFERENT TYPES OF ENVIRONMENTAL POLLUTION AND CONTROL MEASURES	3	1	1			2				2	2	2		

SEM:04

10 — APPLIED NUMERICAL METHODS

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME210.01 (CO1)	UNDERSTANDING OF ISSUES RELATED TO ENVIRONMENT AND THEIR IMPACT ON THE HUMAN LIFE.	3	2	1	1							1	2		
ME210.02 (CO2)	UNDERSTANDING ON THE SOLUTIONS RELATED TO THE ENVIRONMENTAL PROBLEMS.	3	1									1	2		
ME210.03 (CO3)	UNDERSTANDING OF DIFFERENT COMPONENT OF ENVIRONMENT AND THEIR FUNCTION AND SUSTAINABLE DEVELOPMENT.	3	2									1	1		
ME210.04 (CO4)	STUDENT WILL BE ABLE TOâ€" ? COMPREHEND THE IMPORTANCE OF ECOSYSTEM AND BIODIVERSITY	3	1									1	1		
ME210.05 (CO5)	TO CORRELATE THE HUMAN POPULATION GROWTH AND ITS TREND TO THE ENVIRONMENTAL DEGRADATION AND DEVELOP THE AWARENESS ABOUT HIS/HER ROLE TOWARDS ENVIRONMENTAL PROTECTION AND PREVENTION	3	2									1	1		
ME210.06 (CO6)	IDENTIFY DIFFERENT TYPES OF ENVIRONMENTAL POLLUTION AND CONTROL MEASURES	3	1									1	1		

SEM:04

11 — ANALYSIS OF MECHANICAL ELEMENTS

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME211.01 (CO1)	in real time engineering problems.	3	2											2	2
ME211.02 (CO2)	conditions.	2	2											2	2
ME211.03 (CO3)	Compute and analyze bending and shear stresses in mechanical components.	3	2	2										2	2
ME211.04 (CO4)	Mohr's circle.	3	2											2	
ME211.05 (CO5)	Analyze the effect of deflection in beams.	2	2	2										2	3
ME211.06 (CO6)	Evaluate buckling and strain energy in beams subject to various types of loading.	2	2											2	3

SEM:04

12 — FLUID AND TURBO MACHINERY

CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
ME212.01 (CO1)	parameters related to Turbines	3	2							2	2			1	
ME212.02 (CO2)	parameters related to Turbines	3	2	3						2	2			1	
ME212.03 (CO3)	centrifugal pumps	3	2	3						2	2			1	
ME212.04 (CO4)	Compressors.	3	2	3						2	2			1	
ME212.05 (CO5)	rotodynamic air compressors	3	2							2	2			1	
ME212.06 (CO6)	efficiencies of gas turbines	3	1							2	2			1	

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

SEM:04 *(continued — Subject 13)*

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
13	THEORY OF MACHINES-I	ME213.01	Understand different types of mechanisms and their applications
		ME213.02	Analyze kinematic theories of mechanism,
		ME213.03	Understand different laws of friction & Force Analysis under Various Situations
		ME213.04	Design cam with follower for different applications
		ME213.05	Select different power transmitting elements according to application
		ME213.06	Select different governing mechanisms according to application.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	3	3					3	3		2	3	
CO2	3	3	3	3					3	3		2	2	
CO3	3	2	2	2					3	3		2	2	
CO4	3	3	3	3					3	3		2	2	
CO5	3	3	3	2	2				3	3		2	2	
CO6	3	2	3	3	2				3	3		2	2	

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
14	MACHINE TOOLS AND PROCESSES	ME214.01	IDENTIFY VARIOUS KINDS OF MOULDING & CASTING PROCESSES.
		ME214.02	IDENTIFY VARIOUS KINDS OF FORMING PROCESSES.
		ME214.03	UNDERSTANDING OF PLASTIC PROCESSING, INJECTION MOULDING, EXTRUSION AND THERMOFORMING.
		ME214.04	UNDERSTANDING THE CONSTRUCTION AND WORKING OF BASIC MACHINE TOOLS.
		ME214.05	EXPLAIN THE CONCEPT, MECHANISM OF MATERIAL REMOVAL WITH RESPECT DIFFERENT PROCESSES.
		ME214.06	IN POSITION TO APPRECIATE THE MERITS OF NON-TRADITIONAL MACHINING AND ITS APPLICATIONS IN INDUSTRIES

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3					3	3		3	3		3		
CO2	3					3	1		3	3		1		
CO3	3					3	2		3	3		3		
CO4	3					2	2		3	3		3		
CO5	3					2	1		3	3		2		
CO6	3					2	1		3	2		2		

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
15	Testing and Measurement	ME215.01	Understand basic constriction of working of various instruments
		ME215.02	equation of fluid mechanics i.e. Continuity equation, Bernoulli's Equation and momentum equation

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			3								2	
CO2	1		2			2				2	3			2

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
16	COMPUTER AIDED DRAFTING	ME216.01	DRAW 2D DRAWINGS AND 3D MODELS OF SIMPLE COMPONENTS.
		ME216.02	UNDERSTAND GEOMETRIC DIMENSIONING AND TOLERANCING DURING 2D DRAWING & 3D MODELING
		ME216.03	USE MODERN ENGINEERING TECHNIQUES, TOOLS AND SKILLS FOR ENGINEERING PRACTICE.
		ME216.04	UNDERSTAND DETAIL AND ASSEMBLY DRAWINGS & PRODUCTION DRAWING
		ME216.5	USE MODERN ENGINEERING TECHNIQUES, TOOLS AND SKILLS FOR ENGINEERING PRACTICE.
		ME216.6	DEVELOP THE SKILLS FOR DRAFTING USING CAD SOFTWARE AND GET THE KNOWLEDGE TO ENHANCE THE CAD UTILITIES.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				3				3	3		3	3	
CO2	3	2			3				3	3		3	3	
CO3	3				3				3	3		3	3	
CO4	3				3				3	3		3	3	
CO5	3				3				3	3		3	3	
CO6	3	2			3				3	3		3	3	

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
17	Computer Graphics	ME217.01	To acquire the knowledge of basics of computer graphics.
		ME217.02	To Apply basic programming in C for line, rectangle, circle etc for different shapes.
		ME217.03	scaling and rotating.
		ME217.04	To Analyzing the hidden unwanted parts in graphics and do the program on animation
		ME217.05	To choose the different of curves and surfaces

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			3				3	3		1	2	
CO2	2	2	2		3				3	3		1	2	
CO3	2	2	2		3				3	3		1	2	
CO4	2	2			3				3	3		1	2	
CO5	2	2	1		3				3	3		1	2	

CO-PO Mapping

SEM:04

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)
18	WORKSHOP PRACTICE IV	ME218.01	operation.
		ME218.02	Understand Construction, Mechanism and Application of Lathe Machine, Drilling Machine, and Milling Machine
		ME218.03	operation along with its process sheet
		ME218.04	Understand basics of CNC and VMC Machine

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3		2		2									
CO2	3													
CO3	2		2		3									
CO4	2		3		3									

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
19	Control Engineering	PCC-ME 301.01	To understand control system, its type andapplications
		PCC-ME 301.02	To model physical System
		PCC-ME301.03	To determine system stability and systemresponse.
		PCC-ME301.04	To understand various controlactions
		PCC-ME301.05	To use MATLAB software to analyze control system

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2	3		2		2		2							
CO3	3		2											
CO4	3		2		3		2							
CO5	3		2		3									

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
20	Theory of Machines - II	PCC-ME 302.01	UNDERSTAND THE TYPES OF GEAR & DETERMINE THE INTERFERENCE OF INVOLUTE TOOTH GEAR
		PCC-ME302.02	STUDENT ARE ABLE TO CALCULATE DERIVE PARAMETER FOR A GIVEN PROBLEM
		PCC-ME302.03	STUDENT WILL UNDERSTAND GYROSCOPIC EFFECTS ON AEROPLANE, TWO WHEELER, THREE WHEELER SHIP
		PCC-ME302.04	DO FORCE ANALYSIS OF MECHANISMS.
		PCC-ME302.05	SOLVE A BALANCING PROBLEM.
		PCC-ME302.06	UNDERSTAND & ANALYSIS OF TURNING MOVEMENT DIAGRAM ,FLYWHEEL

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								2	2		2	2	
CO2	3								2	2		2	2	
CO3	2	3	2	2					2	2		2	3	
CO4	3	3	2	2	2				2	2		2	3	
CO5	3								2	2		2	2	
CO6	2								2	2		2	2	

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
21	Heat & Mass Transfer	PCC-ME 303.01	Formulate basic equations for heat transferproblems.
		PCC-ME303.02	Applyheattransferprinciplestodesignandevaluateperformanceofthermal systems
		PCC-ME303.03	Calculate the effectiveness and ratingof heat exchangers.
		PCC-ME303.04	Calculate heat transfer byradiation between objects withsimple geometries.
		PCC-ME303.05	problems.
		PCC-ME303.06	Evaluate the relative contributions of different modes of heat transfer

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2			1	1			3	3		3		
CO2	3	2			1	1			3	3		3		
CO3	3	2			1	1			3	3		3		
CO4	3	2			1	1			3	3		3		
CO5	3	2			1	1			3	3		3		
CO6	3	2			1	1			3	3		3		

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
22	Machine Design-I	PCC-ME304.01	Apply basic principles of machine design
		PCC-ME304.02	Design machine elements on the basis of strength concept.
		PCC-ME304.03	Use design data books and standard practices.
		PCC-ME304.04	Select machine elements from Manufacturer's catalogue.
		PCC-ME304.05	Compression Springs Used For Static Loads.
		PCC-ME304.06	Understand And Design The Pulley And Belts.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2			1						1		
CO2	2	2	2			1						1		
CO3	3	2	2			1						1		
CO4	3	2	2			1						1		
CO5	3	2	2			1						1		
CO6	3	2	2			1						1		

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
23	Manufacturing Engineering	PCC-ME305.01	Understand various metal cutting technology including the process and measurement etc.
		PCC-ME305.02	Identify and select proper cutting tool with respect to work piece materials
		PCC-ME35.03	Identify parameters of single and multipoint cutting tools
		PCC-ME305.04	Design and Draw Jig and Fixture.
		PCC-ME305.05	Select and design dies for press working operations.
		PCC-ME305.06	Understand and apply CNC Technology

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2	3													
CO3	3													
CO4	2	2	2						3	2		2		2
CO5	3		2											
CO6	2												2	

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
24	Enterprise Resource Planning	PCC-ME306.01	Understand the structure of an ERP system & its benefits.
		PCC-ME306.02	Understand ERP & related technologies.
		PCC-ME306.03	Understand the manufacturing perspective of ERP.
		PCC-ME306.04	Understand the study of Business modules like Finance, Mfg. and Production, HR, Plant maintenance,
		PCC-ME306.05	Understand the ERP Implementation Life Cycle Process.
		PCC-ME306.06	Understand the various ERP packages.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3					2	1		2	2		2		
CO2	3					2			2	2		2		
CO3	3								3	2				
CO4	3								2	2		2		
CO5	3								3	3				
CO6	3					2			2					

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
25	CAD CAM Laboratory	PCC-ME307.01	Understand and read engineering Drawings.
		PCC-ME307.02	Prepare solid and surface models from 2D drawings
		PCC-ME307.03	Prepare assemblies and BOM
		PCC-ME307.04	Conversion of 3D Models into orthographic views.
		PCC-ME307.05	Know the process of CAD data exchange between the software.
		PCC-ME307.06	Understand the basics of Computer Aided Manufacturing.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				3				2	2		1		
CO2	3				3				2	2		1		
CO3	3				3				2	2		1		
CO4	3				3				2	2		1		
CO5	3				3				2	2		1		
CO6	3				3				2	2		1		

SEM:05

SR.NO	SUBJECT	co no	Course Outcomes (COs)
26	WORKSHOP PRACTICE –	PCC-ME308.01	Select the suitable machining operations and prepare process sheet to manufacture a
		PCC-ME308.02	Control key dimensions on a component using principles of metrology and assembly

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				3		1							
CO2	3				3									

SEM:06

SR.NO 27 — Industrial Management and Operations Research

co no	Course Outcomes (COs)
PCC-ME311.01	Apply the concepts of Industrial management and operations research approaches.
PCC-ME311.02	To understand marketing management principles & functions, Types of Market.
PCC-ME311.03	Know the types of small-scale industries (SSI), stages in starting SSI & apply the knowledge about
PCC-ME311.04	Understand & solve the Formulation of LPP problem & Graphical solution of LPP
PCC-ME311.05	Understand & solve the methods of Assignment & Transportation problems.
PCC-ME311.06	Understand the various techniques of Project Management such as Network Model and Sequencing Model.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		2					1			2		
CO2	3	2		2					1			2		
CO3	3	1		2					1			2		
CO4	3	2		2					1			2		
CO5	3	2		2					1			2		
CO6	3	2		2					1			2		

CO-PO Mapping

SEM:06

SR.NO 28 — Industrial Fluid Power

co no	Course Outcomes (COs)
PCC-ME312.01	Do analysis of performance of Hydraulic and pneumatic system
PCC-ME312.02	Demonstrate Hydraulic and pneumatic system
PCC-ME312.03	Apply Hydraulic and pneumatic system fundamentals to industrial applications
PCC-ME312.04	Demonstrate knowledge about the fundamentals of Hydraulic and pneumatic system
PCC-ME312.05	Understating Of Hydraulic Circuits And Applications In Various Industries
PCC-ME312.06	Understating Of Pneumatic Circuits And Applications In Various Industries

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				2									
CO2	3				2					3				
CO3	3				2									
CO4	3				2					2				
CO5	3		2		2				3	3				
CO6	3		2		2				3	3				

CO-PO Mapping

SEM:06

SR.NO 29 — Metrology and Quality Control

co no	Course Outcomes (COs)
PCC-ME313.01	Identify and use various measuring instruments and select appropriate instrument for particular feature
PCC-ME313.02	Distinguish and understand quality assurance and quality control. They can use control charts and sampling
PCC-ME313.03	Learn advanced techniques of metrology in various industrial applications.
PCC-ME313.04	Prepare and understand drawings with general dimensions, tolerances and surface finish.
PCC-ME313.05	Distinguish And Understand Quality Assurance And Quality Control. They Can Use Control Charts And
PCC-ME313.06	Prepare And Understand Drawings With General Dimensions, Tolerances And Surface Finish.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2												
CO2	3													
CO3	2											1		
CO4	3	2												
CO5			3		2				3	3				
CO6	2	2			2									

CO-PO Mapping

SEM:06

SR.NO 30 — Machine Design-II

co no	Course Outcomes (COs)
PCC-ME314.01	Design machine elements subjected to fluctuating loading
PCC-ME314.02	Understand effect of tribological considerations on design
PCC-ME314.03	Select rolling contact bearings from manufacturer's catalogue.
PCC-ME314.04	Design sliding contact bearings used in various mechanical systems
PCC-ME314.05	Design various types of gears such as spur, helical, bevel and worm gear
PCC-ME314.06	To Understand And Apply Principles Of Gear Design To Spur Gears And Industrial Spur Gear Boxes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1		
CO2	3	2	2									1		
CO3	3	3	1									1		
CO4	3	2	1									1		
CO5	3	2	2									1		
CO6	3	2	2									1		

CO-PO Mapping

SEM:06

SR.NO 31 — Internal Combustion Engines

co no	Course Outcomes (COs)
PCC-ME315.01	Demonstrate engine construction, function of various parts of theengine
PCC-ME315.02	Demonstrate combustionmechanism.
PCC-ME315.03	Demonstrate importance and functions of various systems on theengine.
PCC-ME315.04	Demonstrate need and methods of enginetesting.
PCC-ME315.05	Understand the impact of vehicular pollution and ways to reduce or control thepollution
PCC-ME315.06	Students Will Demonstrate Knowledge Of The Operating Characteristics Of Common Ic Engines

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		1					2		1	1		
CO2	2	2		1							1	1		
CO3	3	1							2		1	2		
CO4	2	2									2	2		
CO5	3	1							2		1	2		
CO6	3	1							2		2	2		

CO-PO Mapping

SEM:06

SR.NO 32 — Computer Aided Design and Manufacturing

co no	Course Outcomes (COs)
PCC-ME316.01	TO COMPARE AND REPRESENT 2-D AND 3-D ENTITIES
PCC-ME316.02	TO APPLY TRANSFORM TECHNIQUES ON 2-D AND 3-D ENTITIES
PCC-ME316.03	TO EXAMINE CNC PROGRAM FOR PRODUCTION OF COMPONENTS
PCC-ME316.04	TO EXPRESS THE PRINCIPLES AND METHODS OF RAPID PROTOTYPING

	PO1	PO2	PO3	PO4	PO5			PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2			3				3	3		3		
CO2	3	3			3				3	3		3		
CO3	3	3			3				3	3		3		
CO4	3	3			3				3	3		3		

CO-PO Mapping

SEM:06

SR.NO 33 — Workshop Practice–VI

co no	Course Outcomes (COs)
PCC-ME318.01	Select the suitable machining operations and prepare process sheet to manufacture a
PCC-ME318.02	Control key dimensions on a component using principles of metrology and assembly

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2			2							2		
CO2	3	3			2							3		

CO-PO Mapping

SEM:06

SR.NO 34 — Professional Skill Development

co no	Course Outcomes (COs)
PCC-ME319.01	EFFECTIVELY USE TECHNIQUES FOR SELF-AWARENESS AND SELF-DEVELOPMENT TO INCREASE CONFIDENCE IN ABILITIES
PCC-ME319.02	STRENGTHEN SOFT SKILLS TO ACHIEVE SUCCESS IN PROFESSIONAL CAREER
PCC-ME319.03	SMOOTHLY TRANSIT FROM STUDENT LIFE TO PROFESSIONAL LIFE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								3	3		3		
CO2	3								3	3		3		
CO3	3								3	3		3		

	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Development	PCC-ME319.04	CREATE PROFESSIONAL DOCUMENTS USING MS OFFICE TOOLS	CO4	3									3	3		3	

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
35	Refrigeration and Air Conditioning	PCC-ME401.01	Demonstrate an understanding of the need and importance of HVAC technology, the typical and some	CO1	3	2			2		2							
		PCC-ME401.02	Demonstrate an understanding thermal comfort conditions with respect to temperature and humidity and	CO2	3	2	3		2		2							
		PCC-ME401.03	Demonstrate an understanding of psychometrics and its application in HVAC engineering	CO3	3		3				2							
		PCC-ME401.04	Demonstrate an understanding of heat transfer in buildings with a given architectural design and its	CO4	3		2				3							
		PCC-ME401.05	Demonstrate an understanding of the engineering and operation of vapour compression and possibly heat-driven refrigeratio	CO5	3		2				3							

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
36	Mechanical System Design	PCC-ME402.01	Understand the role of aesthetics, ergonomics and creativity in design.	CO1	3								2	2		2	2	
		PCC-ME402.02	Understand theories and principles used in design of pressure vessels. IC Engine and	CO2	2	2	2			2			2	2		3	2	
		PCC-ME402.03	Analyze and select suitable materials and design parameters during the design of pressure	CO3	3	2	2						2	2		3	2	
		PCC-ME402.04	Evaluate the load carrying capacity, stress bearing capacity in various mechanical	CO4	3	2	2			2			2	2		3	2	
		PCC-ME402.05	Design various mechanical systems like pressure vessels, machine tool gear boxes,	CO5	2	2	2			2			2	2		3	2	

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
37	FINITE ELEMENT ANALYSIS	PCC ME 403.01	Elaborate the fundamental concepts of Finite Element method	CO1	3				3				3	3	2	2	2	3
		PCC ME 403.02	Understand the key concepts like Shape function, element stiffness and boundary conditions by	CO2	3	2	2		3				3	3	2	2	2	3
		PCC ME 403.03	Apply the finite element formulations for two dimensional problems using constant strain triangle.	CO3	3	2	2		3				3	3	2	2	2	3
		PCC ME 403.04	Demonstrate the modeling aspects of axisymmetric solids subjected to axisymmetric loading.	CO4	3	2	2		3				3	3	2	2	2	3
		PCC ME 403.05	Apply the finite element formulations for Planer Trusses using 1D element.	CO5	3	2	2		3				3	3	2	2	2	3
		PCC ME 403.06	Solve Scalar field problems by Finite element formulation.	CO6	3			1	3				3	3	2	2	2	3

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
38	AUTOMOBILE ENGINEERING (Elective–I)	PCE ME 404.01	Explain components of automobile.	CO1	3					2	2		2	2				
		PCE ME 404.02	Distinguish various types of automobile lay outs as per drive given to wheels.	CO2	3					2	2							
		PCE ME 404.03	Identify types of automobile bodies and materials used for the same	CO3	3					2			2					
		PCE ME 404.04	Demonstrate various automobile systems like clutch, gearbox final drive, brake,steering	CO4	3								2	2				
		PCE ME 404.05	Demonstrate various electrical and electronic systems like lighting, starting charging	CO5	3					2	2			2				
		PCE ME 404.06	Solve the problems related with various resistances for the automobile, engine power	CO6	3					2	2							

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
39	TOTAL QUALITY MANAGEMENT (Elective–II)	PCE ME 405.01	Understand the concepts of total quality and quality assurance approaches.	CO1	2													
		PCE ME 405.02	service sector at various stages by using various TQM tools and techniques,	CO2					2									
		PCE ME 405.03	Understand vendor rating and select suitable vendor	CO3	2													
		PCE ME 405.04	Interpret various quality attributes and discuss the various quality approaches	CO4	2													
		PCE ME 405.05	Calculate reliability of system	CO5		2		1										
		PCE ME 405.06	They will identify and solve issues in industries using the various techniques of TQM such as 5S, JIT, TPM, Reliability Engi	CO6		2		1										

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
40	SEMINAR	PCC ME 406.01	Have and develop presentation skills.	CO1	2	2			2		1		1		2			
		PCC ME 406.02	Impart knowledge in different aspects of knowledge domains	CO2	1		2			2						2		
		PCC ME 406.03	Make them aware of knowledge in industry perspective and new industry trends	CO3	2				1			2	1					
		PCC ME 406.04	Build confidence and improve communication skills	CO4	1									2	2			
		PCC ME 406.05	Collect ideas through literature survey about new innovations, analyze and present them	CO5	2	2										1		
		PCC ME 406.06	Sharpen their personality and intelligence.	CO6	2						2							

SEM:07

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
41	SUMMER INTERNSHIP	SI ME 407.01	1. UNDERSTAND INDUSTRIAL PRACTICES AND WORKING CULTURE IN INDUSTRY.	CO1	3								3	3		3		
		SI ME 407.02	2. DEMONSTRATE THEIR KNOWLEDGE AND SKILLS WHILE WORKING WITH REAL LIFE PROBLEMS	CO2	3								3	3		3		
		SI ME 407.03	3. ANALYSE AVAILABLE TECHNOLOGIES FOR DESIGNING SOLUTIONS TO THE PROBLEMS.	CO3	3	2			2				3	3		3		
		SI ME 407.04	4. DEMONSTRATE THEIR COMMUNICATION SKILLS IN ORAL AND WRITTEN FORM.	CO4	3								3	3		3		
		SI ME 407.05	5. ORGANIZE THEIR CAREER OPTIONS THROUGH EXPOSURE TO FUTURE TECHNOLOGIES.	CO5					2				3	3		3		

SEM:07

SR.NO	SUBJECT	co no	Course Outcomes (COs)
42	PROJECT PHASE-I	PW ME408.01	Understand The Context Of The Problem/Issues And Describe The Problem With Constraints Involved.
		PW ME408.02	Apply Design Thinking To Generate Alternative Solutions To The Problem With Respect To Available
		PW ME408.03	Evaluate The Alternative Solutions With Respect To Sustainability, Economic Feasibility, Scalability And
		PW ME408.04	create a model of the designed solution and test it for validation.
		PW ME408.05	Write A Technical Report Of The Project Work Done And Present The Same.
		PW ME408.06	create a model of the designed solution and test it for validation.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1				2								
CO2			2		1						2			
CO3								2	1			2		
CO4				2	2				1					
CO5									1	2				
CO6									1	2				

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
43	Mechatronics	PCC ME 409.01	DevelopasimulationmodelforsimplephysicalsystemsandexplainMechatronics design process.
		PCC ME 409.02	Outline appropriate sensors and actuators for an engineering application
		PCC ME 409.03	Write simple PLC programs
		PCC ME 409.04	Explain various applications of design of Mechatronic systems
		PCC ME 409.05	Write A Simple Plc Programme
		PCC ME 409.06	Understanding Of Industrial Control System(Ics)

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3									2				
CO2	2		2		3								3	
CO3	3				2				3					
CO4	3				2				3					
CO5	3		2						3					
CO6	3				2					2				

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
44	ENERGY AND POWER ENGINEERING	PCC ME 410.01	REMEMBER NEED OF DIFFERENT ENERGY SOURCES AND THEIR IMPORTANCE.
		PCC ME 410.02	APPLY THE PRINCIPLE OF CONVERSION OF AVAILABLE ENERGY RESOURCES
		PCC ME 410.03	ANALYZE THE UTILIZATION OF SOLAR, WIND ENERGY ETC
		PCC ME 410.04	UNDERSTAND VARIOUS ENERGY RESOURCES IN DETAILS.
		PCC ME 410.05	ILLUSTRATE POWER PLANT ECONOMICS
		PCC ME 410.06	COMPREHEND VARIOUS EQUIPMENTS/SYSTEMS UTILIZED IN POWER PLANTS.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3								3	3		3		
CO2	3	2					2		3	3		3		
CO3	3	3			2				3	3		3		
CO4	3					2	2		3	3		3		
CO5	3	2		2					3	3		3		
CO6	3	2							3	3		3		

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
45	Noise and Vibration	PCC ME 411.01	Understand relevance of noise in mechanical systems.
		PCC ME 411.02	Carryout measurement of various vibration parameters.
		PCC ME 411.03	Analyze vibratory response of mechanical element/system.
		PCC ME 411.04	Estimate natural frequency of mechanical element/system.
		PCC ME 411.05	Develop mathematical model to represent dynamic system
		PCC ME 411.06	Understand Relevance Of Noise In Mechanical Systems.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1								3	3		3	1	2
CO2	2	2	1	2					3	3		3	1	2
CO3	2	2	1	2					3	3		3	1	2
CO4	2	2	1	2					3	3		3	1	3
CO5	1								3	3		3	2	2
CO6	1								3	3		3	2	2

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
46	INDUSTRIAL ENGINEERING (ELECTIVE-III)	PCE ME 412.01	Apply the concepts, principles and framework of Industrial Engineering and various productivity
		PCE ME 412.02	Manage and implement different concepts involved in methods study and understanding of work content in
		PCE ME 412.03	Apply ergonomic principle for designing simple mechanical component
		PCE ME 412.04	Measure and estimate standard time for job
		PCE ME 412.05	Understand different types of plant layouts.
		PCE ME 412.06	Interpret job evaluation and merit rating

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			2	2	2							3		
CO2	2	3		2										1
CO3	2	3				3	2							2
CO4	2	2	3							3			1	1
CO5	2					3			2	2				2
CO6	2	2			2									1

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
47	INDUSTRIAL AUTOMATION & ROBOTICS (Elective –IV)	PCE ME413.01	Design techniques for the analysis and control of discrete event system
		PCE ME413.02	Applyknowledgeofautomationtoolsandotherequipment'sformanufacturingandassembly components
		PCE ME413.03	Operate in research and development centre for automation
		PCE ME413.04	Identify efficiencies and limitation and provide in depth evaluation of robotic system for
		PCE ME413.05	Getting The Knowledge Of Sensor And Robot End Effector
		PCE ME413.06	Familiar With Various Language's Of Robot And Application.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2				2				2				
CO2	3	2								2		2		
CO3	3		2			2				2				
CO4	3	2												
CO5	3	2				2						2		
CO6	3								2			2		

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
48	online Certificate Course****	PCE ME41401	On successful completion of the course
		PCE ME41402	Knowledge Enhancement: You'll Gain In-Depth Knowledge Of The Topic, Which Could Include
		PCE ME41403	Access To Resources: You Might Gain Access To Additional Resources, Such As Reading Materials,
		PCE ME41404	Confidence Boost: Completing A Certificate Course Can Increase Your Confidence In Your Abilities And
		PCE ME41405	Improved Problem-Solving Abilities: Depending On The Course, You Might Develop Better Problem-

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				2				3	3		3		
CO2	3				2				3	3		3		
CO3	3		3		2				3	3		3		
CO4	3				2				3	3		3		
CO5	3	2			2				3	3		3		

| | | PCE ME41406 | Certification: Upon Successful Completion, You'll Receive A Certificate That Acknowledges Your | | CO6 | 3 | | | | 2 | | | | 3 | 3 | | | 3 | |

			CO-PO Mapping													

SEM:08

SR.NO	SUBJECT	co no	Course Outcomes (COs)
49	PROJECT PHASE–II	PWME 415.01	Able to identify and formulate research problem
		PWME 415.02	Able to design and develop solution to the problem
		PWME 415.03	Able to analyze and solve the complex problems
		PWME 415.04	Able to plan, implement and execute the project
		PWME 415.05	Able To Write Effective Technical Report And Demonstrate Through Presentation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3				3	3		3					
CO2	3	3	3		2			3	3			3		
CO3			3	3	3	2	2	3	3			3		
CO4					3	2	3	3	3	3	3	3		
CO5								2	3	3		3		

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Guddai, A/P- Bhadgaon, Tal. Gadhinglaj, Dist. Kolhapur.
National Assessment and Accreditation Council (NAAC)
Key Indicator - 2.6.1
Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.
Academic Year: 2024-25
Program: DEPARTMENT OF CIVIL ENGINEERING

SEM:03 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	ENGINEERING MATHEMATICS-III	BSC-CV3011	To introduce the concept of linear differential equations of higher and their application	CO1	3	3	2	3					2	2		2
		BSC-CV3012	To introduce concept of vector calculus.	CO2	3	3	2	3					2	2		2
		BSC-CV3013	To learn the concept of Probability.	CO3	3	3	2	3					2	2		2
		BSC-CV3014	To familiarize the students with concepts and applications of Laplace Transforms.	CO4	3	3	2	3					2	2		2
		BSC-CV3015	To understand the concept of Complex variable.	CO5	3	3	2	3					2			2

SEM:03 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
2	FIUID MECHANICS_I	ESC-CV3041	Student are able to understand the fluid characteristics and their application in different material manufacturing industry	CO1	3	2	1									2
		ESC-CV3042	Student are able to measure the pressures at various conditions with different types of pressure measuring devices	CO2	3	2	1	3								2
		ESC-CV3033	Recognize the principles of continuity , momentum and energy as applies to fluid in motion.	CO3	3	3	2	1								2
		ESC-CV3044	Students are able to calculate the discharges of fluid	CO4	3	2	2									2
		ESC-CV3045	Identify and analyse various types of fluid flows.	CO5	3	2	2									2
		ESC-CV3046	Measure the quantities of fluid flowing in pipes, tanks and channels.	CO6	3	2			3							2

SEM:03 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
3	SURVEYING-I	PCC-CV3021	1)Determine linear and angular measurements.	CO1	3	3	2	2	3	2	2	2	2	3	2	2
		PCC-CV3022	2)Record various measurements in the field book.	CO2	3	3	2	2	3	2	2	2	2	3	2	2
		PCC-CV3023	3)Find areas of irregular figures.	CO3	3	3	3	2	3	2	2	2	2	3	2	2
		PCC-CV3024	4)Prepare plans and sections required for civil engineering projects.	CO4	3	3	2	3	3	3	3	3	2	3	3	2
		PCC-CV3025	5)To find out area and volumes using various instruments.	CO5	3	3	2	2	3	2	2	2	2	3	2	2

SEM:03 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
4	STRENGTH OF MATERIALS	ESC-CV3031	Analyze stress and strain in structural components subjected to axial, torsional, and bending loads.	CO1	3	3							1	1		1
		ESC-CV3032	Evaluate shear force and bending moment of statically determinate structure.	CO2	3	3							1	1		1
		ESC-CV3033	Analyze the truss using the method of joints & method of sections.	CO3	3	3							1	1		1
		ESC-CV3034	Analyze structural elements subjected to bending moments, including calculation of bending stresses.	CO4	3	3							1	1		1
		ESC-CV3035	Analyze structural elements subjected to bending moments, including calculation of shear stresses.	CO5	3	3							1	1		1
		ESC-CV3036	Apply strain energy method for analyzing beams & thin wall cylinders.	CO6	3	3							1	1		1

SEM:03 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
5	BUILDING CONSTRUCTION AND MATERIALS	PCC-CV3051	1)Know the building Materials.	CO1	3				2		3					
		PCC-CV3052	2)Describe properties and suitability of various building materials.	CO2	3											
		PCC-CV3053	3)State the different building components	CO3	3											2
		PCC-CV3054	4)Demonstrate different bonds in brick masonary.	CO4	3				2							
		PCC-CV3055	5)Produce drawings of different building components.	CO5	3		2									
		PCC-CV3056	6)Explain different types of roof coverings & types of flooring	CO6	3						2					

SEM:04 — CO-PO- MAPPING

SR.NO	SUBJECT	CO CODE NO	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
6	STRUCTURAL MECHANICS	ESC-CV4011	Identify the response of elastic body for external actions.	CO1	3	3	2	2	2						0	2
		ESC-CV4012	To Analyze the effect of Combined Stresses and Structural Stability	CO2	3	3	3	3	2							2
		ESC-CV4013	To compute the Influence Line Diagrams and Application to Structural Systems	CO3	3	2	3	2	3					2		2
		ESC-CV4014	To understand Buckling of Columns and Stability Criteria	CO4	3	3	2	3	2							2
		ESC-CV4015	To identify the Slope and Deflection in Beams	CO5	3	3	3	3	2							2
		ESC-CV4016	To understand the Torsion Analysis and Combined Loading of Shafts	C06	3	2	2	3	3							2

SEM:04 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
7	SURVEYING - II	PCC-CV402	1)Adopt the principles of advanced surveying instruments	CO1	3	2	1									1
			2)Formulate triangulation stations, Flight planning and Ground control points (GCPs).	CO2			1						3			
			3)Apply GIS and GPS concepts to civil engineering problems.	CO3		2				1						3
			4)Design and setout curves by different methods	CO4	2	3							1			
			5)To understand the elements of different types of curves and preliminary survey for road.	CO5	2	3				1			1			1

SEM:04

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
8	CONCRETE TECHNOLOGY	PCC-CV4031	strength and durability.	CO1	3					2	2		1			3
		PCC-CV4032	properties.	CO2	3				2	2	2		1			3
		PCC-CV4033	3)Understand the factors affecting properties of concrete.	CO3	3					1	2					3
		PCC-CV4034	4)Design the concrete mix proportion as per Indian standard code of practice	CO4	3	3	2	2	1				2		2	3
		PCC-CV4035	5)Demonstrate Non Destructive Testing (NDT) and evaluate quality of existing concrete.	CO5	3					3	2		1			3
		PCC-CV4036	6)Understand different types of concrete and their applications.	CO6	3					3	2		3			3

SEM:04

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
9	FLUID MECHANICS	ESC-CV404.1	1. Solve channel flow problems by applying fundamental laws & equations.	CO1	3	3	-	-	-	-	-	-	2	2	-	2
		ESC-CV404.2	2. Understand the dynamics of GVF & determine geometrical parameters.	CO2	3	3	-	-	-	-	-	-	2	2	-	2
		ESC-CV404.3	3. Understand & apply the concepts of hydraulic jump, energy dissipation & surges.	CO3	3	3	-	-	-	-	-	-	2	2	-	2
		ESC-CV404.4	4. Derive & apply the equations for discharge measurement through notches & weirs.	CO4	3	3	-	-	-	-	-	-	2	2	-	2
		ESC-CV404.5	5. Apply impulse momentum principle & determine impact of jets on vein at various velocities.	CO5	3	3	-	-	-	-	-	-	2	2	-	2
		ESC-CV404.6	6. Analyze Pelton, Francis, Kaplan turbine & centrifugal pumps by their performance characteristics.	CO6	3	3	-	-	-	-	-	-	2	2	-	2

SEM:04

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
10	BUILDING DESIGN AND DRAWING	PCC-CV4051	1)Know principles of building planning	CO1	3	2	3	1		2	2		1		2	1
		PCC-CV4052	2)Describe Building Bye-Laws and regulations.	CO2	3	2	2	2		2	2			2		
		PCC-CV4053	3)Plan and draw residential building considering principle of planning and Building ByeLaws and regulation	CO3	3		2		1	2				1	2	
		PCC-CV4054	4)Explain techniques of maintenance, repair and rehabilitation of structure.	CO4	3		2	3	2		3			2		
		PCC-CV4055	5)Draw the working drawing of foundation detail, plumbing and electrification of building.	CO5	3	2	2		1	1	2		1		1	2
		PCC-CV4056	6)Illustrate the concept of ventilation, air conditioning and thermal insulation.	CO6	3	2	2	1	2		1				2	1
		PCC-CV4057	7)Describe different types of building finishes.	CO7	3		2		2		1		1		2	1

SEM:05

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
11	WATER RESOURCE ENGINEERING - I	PCC-CV5011	Understand the hydrological parameters and apply the knowledge of estimation of hydro meteorological parameters.	CO1	3	2	-	-	-	3	-	2	-	-	-	2
		PCC-CV5012	Understand the terms evaporation, evapotranspiration, infiltration, runoff and factors affecting there off.	CO2	3	2	-	-	-	3	-	2	2	-	-	-
		PCC-CV5013	understand the terms Storm hydrograph, direct runoff hydrograph, unit hydrograph and estimation of peak flow using hydrograph techniques	CO3	3	3	-	-	-	3	-	2	2	2	-	-
		PCC-CV5014	Understand and analyze groundwater hydrology.	CO4	3	3	-	-	-	-	2	-	1	2	-	-
		PCC-CV5015	Apply different methods of efficient irrigation and water conservation.	CO5	3	3	-	-	-	3	3	2	2	2	-	2
		PCC-CV5016	Calculate water requirements of crops.	CO6	3	3	2	2	-	2	3	2	2	2	-	2

SEM:05

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
12	DESIGN OF STEEL STRUCTURE	PCC-CV5021	Students will demonstrate an understanding of the fundamental design philosophy of steel structures, including advantages and disa	CO1	2	2	2	-	-	-	2	-	-	-	-	-
		PCC-CV5022	Students will be able to analyze and design bolted and welded connections under axial and eccentric loading, considering factors such	CO2	3	3	3	-	2	-	-	-	-	-	-	-
		PCC-CV5023	Students will be proficient in selecting common sections, calculating net area, predicting modes of failure, and determining the load c	CO3	3	2	2	2	-	-	-	-	-	-	-	-
		PCC-CV5024	Students will demonstrate competence in designing compression members, including selecting economical sections, assessing slende	CO4	3	3	3	-	-	-	-	-	-	-	2	-
		PCC-CV5025	bases, gusseted bases, and concrete pedestals, considering various loading conditions.	CO5	3	3	3	-	2	-	-	-	2	-	-	-
		PCC-CV5026	moments, and their effects on the structural behavior.	CO6	3	3	2	2	-	-	-	-	-	2	-	-

SEM:05

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
13	ENVIRONMENTAL ENGINEERING - I	PCC-CV503.1	Describe the various sources of water with respect to quality and quantity of water.	CO1	3	-	-	-	-	-	-	-	-	-	-	-
		PCC-CV503.2	Design the various water treatment units.	CO2	3	3	3	-	-	2	1	2	3	2	-	3
		PCC-CV503.3	Illustrate the special water treatments and sequencing of treatment for various qualities of surface & ground water.	CO3	3	-	-	-	-	-	-	-	-	-	-	-
		PCC-CV503.4	Describe the various components related to transmission and design of distribution of water.	CO4	3	-	-	-	-	2	2	2	-	2	-	-
		PCC-CV503.5	Summarize the different water supply appurtenances.	CO5	3	-	-	-	-	-	-	-	-	-	-	-

SEM:05

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		PCC-CV504.1	1. Able to evaluate the Index and Engineering properties of soil	CO1	3	1	1	-	-	-	2	-	-	-	-	2

					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
14	GEOTECHNICAL ENGINEERING- I	PCC-CV504.2	2. Understand the fundamental relationships in properties of soils	CO2	3	1	1	-	- ,	-	2	-	-	-	-	2
		PCC-CV504.3	3. Understands the process and importance of compaction and consolidation	CO3	3	1	1	-	-	-	2	-	-	-	-	2
		PCC-CV504.4	4. Evaluate the stress calculations in soil under different soil conditions	CO4	3	1	1	-	-	-	2	-	-	-	-	2
		PCC-CV504.5	5. Know the shear strength of soil and its determination	CO5	3	1	1	-	-	-	2	-	-	-	-	2
		PCC-CV504.6	6. Analyze the lateral pressure on vertical retaining walls	CO6	3	1	1	-	-	-	2	-	-	-	-	2

SEM:05 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15	BUILDING PLANNING & DESIGN	PCC-CV5051	1)Specify dimensions and space requirements for various elements of the building in relation to human body measurements.	CO1	3	2					2					2
		PCC-CV5052	2)Plan, design public building considering principles of planning and Building Bye- Laws and regulations.	CO2	3	3	3			2	2					3
		PCC-CV5053	3)Prepare the submission and working drawings of public building.	CO3	3		3							3		2
		PCC-CV5054	4)Illustrate the procedures for preparing perspective drawings of various objects as well as buildings.	CO4	2		2							3		3
		PCC-CV5055	5)Apply knowledge of architectural composition and terms for betterment of aesthetic view.	CO5			2		2		3					3

SEM:05 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
16	WASTE MANAGEMENT	OEC-CV5061	1)To evaluate the effects of various wastes on human beings, animals and on Environment.	CO1	3	2	2			3	3					
		OEC-CV5062	methods.	CO2	3	3	3	1	2	2	2					
		OEC-CV5063	disposal methods.	CO3	3	3	3			2	3					
		OEC-CV5064	and to suggest their disposal methods.	CO4	3		1			2	3					
		OEC-CV5065	5)To characteristics and to select treatment options for selected industrial wastewater.	CO5	3			1			2			2		
		OEC-CV5066	6)To discuss the impacts of hazardous waste and air pollution.	CO6	3						2	3		2		

SEM:06 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
17	THEORY OF STRUCTURE	PCC-CV6012	1)Understand the concept of determinacy and indeterminacy.	CO1	3	2	1	1	2	1	3	2	1	1	1	2
		PCC-CV6014	2)Apply various techniques of structural mechanics to solve indeterminate structures.	CO2	2	3	2	1	3	1	2	3	2	1	2	3
		PCC-CV6013	3)Analyze indeterminate structures by using various approaches.	CO3	1	2	3	2	1	3	1	2	3	2	1	2
		PCC-CV6014	4)Know the limitations of the methods of solution and their outcomes.	CO4	3	1	2	3	2	2	3	1	2	3	2	1

SEM:06 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18	ENGINEERING MANAGEMENT	HM-CV602	1)Understand importance of management in construction.	CO1	3								3		3	3
			2)Use the Project planning and management tools in Construction.	CO2	3	2			3	1	1		3		3	3
			3)Evaluate and draw project network for estimating time and cost.	CO3	3	2							3		3	3
			4)Know the techniques of Material Management.	CO4	3				2	1	1		3		3	3
			5)Explore and understand the concepts of Economics in construction.	CO5	3								3		3	3
			6)Know the advance concepts in management.	CO6	3								3		3	3

SEM:06 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
19	ENVIRONMENTAL ENGINEERING - II	PCC-CV603.1	1. Explain sources, characteristics and methods of wastewater collection.	CO1	3	-	-	1	1	2	1	1	-	1	-	1
		PCC-CV603.2	2. Design the primary and secondary wastewater treatment units and describe low cost wastewater treatment units.	CO2	3	2	3	1	2	-	3	-	2	-	2	2
		PCC-CV603.3	3. Understand various methods of wastewater disposal	CO3	3	-	-	-	2	-	1	-	2	2	2	3
		PCC-CV603.4	4. Describe air pollution, its effect and controlling techniques.	CO4	3	1	-	-	2	-	2	1	-	-	3	1
		PCC-CV603.5	5. Explain the necessity and importance of solid waste management.	CO5	3	-	1	-	1	1	2	-	-	-	2	1
		PCC-CV603.6	6. Explain the basic knowledge of various pollution sources and their impacts	CO6	3	-	-	1	1	-	1	-	1	2	-	1

SEM:06 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
20	GEOTECHNICAL ENGINEERING- II	PCC-CV6041	1. Understand the behavior of soil & rocks under compression & tensile strength.	CO1	3	-	-	-	-	-	-	-	2	2	-	2
		PCC-CV6042	2. Apply Terzaghi's, Meyerhof's theory & I. S. code method to determine bearing capacity of soil.	CO2	3	2	-	-	-	-	-	-	2	2	-	2
		PCC-CV6043	3. Calculate settlement, design shallow & deep foundations.	CO3	3	2	-	-	-	-	-	-	2	2	-	2
		PCC-CV6044	4. Analyze types of pile foundations on basis of type of soil.	CO4	3	2	-	-	-	-	-	-	2	2	-	2
		PCC-CV6045	5. Understand various methods of well foundations & ground improvement techniques.	CO5	3	-	-	-	-	-	-	-	2	2	-	2
		PCC-CV6046	6. Apply basic concepts of slope stability on field.	CO6	3	2	-	-	-	-	-	-	2	2	-	2

SEM:06 — CO-PO- MAPPING

SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21	SOIL & WATER CONSERVATION TECHNIQUES	OEC-CV6051	Understand methods of soil and water conservation.	CO1	3	3	2	-	-	-	3	-	-	-	-	-
		OEC-CV6052	Develop an integrated model for sustainable natural conservation.	CO2	3	3	3	2	2	-	3	-	-	-	-	-
		OEC-CV6053	Analyze the needs for protection of banks and preservation of soil.	CO3	3	3	2	2	-	2	3	-	-	-	-	-
		OEC-CV6054	plan and design water harvesting structures	CO4	3	3	3	2	3	-	3	-	-	-	-	-
		OEC-CV6055	understand the principles of integrated watershed management ALSO plan and manage watershed projects.	CO5	3	3	3	2	2	2	3	-	2	2	-	-

SR.NO	SUBJECT		Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		OEC-CV6056	Explain the groundwater exploration techniques and its artificial recharge.	CO6	3	3	-	2	2	2	3	-	1	2	-	-

SEM:06										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
22	STRUCTURAL DESIGN & DRAWING	PCC-CV6061	Analyze and design different types of bolted & welded connections	CO1	3	3	2									
		PCC-CV6062	members & its design,	CO2	3	3	3									
		PCC-CV6063	3)Analyze and design of steel column, flexural members and its elements.	CO3	3	3	3									
		PCC-CV6064	4)Aware of application of software in structural analysis and design.	CO4		2			3							
		PCC-CV6065	5)Prepare the working drawing as per requirement of project execution.	CO5					3							

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
23	DESIGN OF CONCRETE STRUCTURE- I	PCC-CV7011	required for design of concrete structures.	CO1	3	3	3			1				2	1	
		PCC-CV7012	2)Understand the design process of concrete structure	CO2	3	3	3	3						1	1	
		PCC-CV7013	footing, column, beam slab, staircase etc.	CO3	3	3	3	3						2	1	
		PCC-CV7014	4)Design the individual members and hence building.	CO4	3	3	3	2						2	2	

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
24	EARTHQUAKE ENGINEERING	PCC-CV7031	Analyze Earthquake Phenomena and Seismological Concepts	CO1	3	2	2	2	-							-
		PCC-CV7032	Apply Vibration Theory to Structural Analysis	CO2	3	2	2	3	2							
		PCC-CV7033	Evaluate Earthquake Response Using Spectrum Analysis	CO3	3	2	2	2	2							-
		PCC-CV7034	Design Earthquake-Resistant Structures	CO4	3	3	2	3	3							2
		PCC-CV7035	Assess and Strengthen Masonry Structures	CO5	3	2	3	3	2							2
		PCC-CV7036	Implement Modern Earthquake-Resistant Technologies	CO6	3	3	3	3	2							3

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
25	QUANTITY SURVEY & VALUATION	PCC-CV703.1	1. Explain the importance of estimation in Civil Engineering works.	CO1	3	3	2	1	2	2	2	-	-	-	-	3
		PCC-CV703.2	2. Prepare rate analysis & Specification of various items.	CO2	3	3	1	1	2	2	-	-	-	-	-	3
		PCC-CV703.3	3. Student Will be able to understand how to take off the quantities using different methods	CO3	3	3	-	1	3	1	-	-	-	-	-	3
		PCC-CV703.4	4. To estimate for various construction projects & develop BBS	CO4	3	3	2	2	3	1	-	-	-	-	-	3
		PCC-CV703.5	5. Explain importance of valuation in Civil Engineering works.	CO5	3	2	-	-	3	2	-	-	-	-	-	3
		PCC-CV703.6	6. Student will be able to develop valuation of buildings using different methods of valuation	CO6	3	3	1	1	3	2	-	-	-	-	-	3

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
26	TRANSPORT ENGINEERING - I	PCC-CV704.1	1. Carry out surveys involved in planning and highway alignment	CO1	3	2	2	2	2	1	-	-	2	-	-	1
		PCC-CV704.2	2. Design the geometric elements of highways and expressways	CO2	3	2	2	-	2	1	-	-	1	-	1	-
		PCC-CV704.3	3. Carry out traffic studies and implement traffic regulation and control measures and intersection design	CO3	3	2	1	-	2	1	1	-	1	1	2	2
		PCC-CV704.4	4. Characterize pavement materials and design flexible and rigid pavements as per IRC	CO4	3	-	1	-	1	2	1	-	-	-	2	1
		PCC-CV704.5	5. Student will able understand of various road construction methods, pavement failure and maintenance need.	CO5	3	1	1	1	-	2	1	-	-	-	2	-
		PCC-CV704.6	6. Student will understand tunneling basics, evaluate tunnel design, suitability, differentiate tunneling method	CO6	3	1	1	2	3	2	1	-	1	1	-	-

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
27	SOLID WASTE MANAGEMNET	PCE-CV7051	disposal in a system of municipality organizational structure.	CO1	3	2	2									3
		PCE-CV7052	2)To acquire a fair amount of knowledge on waste characterization and its management practices	CO2	3	1	2									3
		PCE-CV7053	disposals in various ways.	CO3	3	2	2									3
		PCE-CV7054	development.	CO4	3	1	2									3
		PCE-CV7055	urban areas.	CO5	3	3	2									3

SEM:07										CO-PO- MAPPING						
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
28	LEGAL ASPECT IN CIVIL ENGINEERING	HM-CV7061	1). Students will learn Indian contract act, Arbitration act and contract administration.	CO1	3	2				3				2		1
		HM-CV7062	2) Students will understand the labour laws.	CO2	3	2							1			1
		HM-CV7063	3)Students will be understand safety engineering and relevant acts.	CO3	3	2				2			2			1

SEM:08										CO-PO- MAPPING						

SR.NO	SUBJECT		Course Outcomes (COs) Student will be able		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
29	DESIGN OF CONCRETE STRUCTURE - II	PCC-CV801.1	1. To design Sections subjected to torsion.	CO1	3	2	3	1		2						3
		PCC-CV801.2	2. To design Continuous beams	CO2	3	2	3	1								3
		PCC-CV801.3	3. To design Water tanks resting on ground	CO3	3	2	3	1		1						3
		PCC-CV801.4	4. To Analyse Pre-stressed concrete sections	CO4	3	3	2			1						3
		PCC-CV801.5	5. To design Pre-tensioned & Pro-tensioned concrete sections	CO5	3	2	3	1		2						3
		PCC-CV801.6	6. To design Pre-stressed concrete sections	CO6	3	2	3			2						3

SEM:08												CO-PO- MAPPING				
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
30	WATER RESOURCE ENGINEERING - II	PCC-CV802.1	1. IDENTIFY AND UNDERSTAND VARIOUS ISSUES RELATED TO WATER RESOURCES SYSTEMS.	CO1	3	-	-	-	-	2	2	-	1	-	-	3
		PCC-CV802.2	2. UNDERSTAND THE ROLE OF DAMS AND RESERVOIRS IN CONTROLLING THE FLOODS.	CO2	3	-	-	-	2	2	2	-	1	-	-	3
		PCC-CV802.3	3. PLAN AND DESIGN DIFFERENT TYPES OF HYDRAULIC STRUCTURES.	CO3	3	-	-	-	-	1	2	-	-	-	-	3
		PCC-CV802.4	4. SELECT RELEVANT DIVERSION HEAD WORKS FOR THE SPECIFIC SITE CONDITIONS.	CO4	3	3	2	2	1	-	-	-	2	-	2	3
		PCC-CV802.5	5. PLAN, DESIGN AND MONITOR AN EFFICIENT CANAL NETWORK SYSTEM.	CO5	3	-	-	-	3	2	-	-	1	-	-	3
		PCC-CV802.6	6. UNDERSTAND THE ROLE OF RIVERS IN THE DEVELOPMENT OF A NATION.	CO6	3	-	-	-	3	2	-	-	3	-	-	3

SEM:08												CO-PO- MAPPING				
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
31	TRANSPORT ENGINEERING - II	PCC-CV803.1	geometric design, and construction of various facilities of the airport.	CO1	3	2	1	-	3	2	2	-	2	3	2	3
		PCC-CV803.2	Able to design taxiways & aprons and summarise the concepts of the terminal service facilities.	CO2	3	2	1	1	3	2	1	-	2	3	2	2
		PCC-CV803.3	transportation.	CO3	3	1	1	-	-	-	1	1	-	1	1	1
		PCC-CV803.4	Apply the knowledge of railway track components, materials and fixtures and fastenings	CO4	3	-	1	1	1	1	-	-	1	1	1	1
		PCC-CV803.5	components of railway track.	CO5	3	2	1	2	1	1	-	-	1	-	1	1
		PCC-CV803.6	Discuss the IRC standard live loads and design the deck slab type bridges. Design and detail of types of beam bridges.	CO6	3	3	3	3	2	3	-	1	2	3	2	2

SEM:08												CO-PO- MAPPING				
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
32	ADVANCED DESIGN OF FOUNDATION	PCE-CV8041	Understand the different types of foundations & their necessities.	CO1	3	2	1		3	1						
		PCE-CV8042	Select the suitable foundation system based on soil and loading conditions.	CO2	3	3	2									
		PCE-CV8043	Calculate dimensions and capacity of shallow foundations.	CO3	3	2			1							
		PCE-CV8044	Design the foundations for Industrial machines under dynamic loadings.	CO4	3	2				1						
		PCE-CV8045	Understand suitable technique for weak soil to enhance the stability of foundations.	CO5	3	3	2					2			1	
		PCE-CV8046	Analyse the earth and water retaining structures used for special functions	CO6	3	2	1									

SEM:08												CO-PO- MAPPING				
SR.NO	SUBJECT		Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
33	STRUCTURAL DESIGN & DRAWING	PCE-CV8051	1).Translate the ideas into workable plans	CO1	3	2	3	1	2	3	2	1	3	2	1	3
		PCE-CV8052	2)Classify the components	CO2	2	3	2	1	3	2	3	1	2	3	2	1
		PCE-CV8053	3)Design the units & hence the structure as a whole	CO3	3	3	3	2	2	3	2	3	3	3	3	2
		PCE-CV8054	4)Draft the details for execution	CO4	1	1	2	3	1	1	1	2	1	1	1	3
		PCE-CV8055	5)To read and understand the supplied drawing for execution on site.	CO5	2	2	3	2	3	2	2	3	2	3	2	3

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National Assessment and Accreditation Council (NAAC) Course CO-PO Mapping Report

Key Indicator - 2.6.1

Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.

Academic Year: 2024-25

Program: DEPARTMENT OF ELECTRICAL ENGINEERING

SEM:03

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
1	ENGINEERING MATHEMATICS-III	BSC-EE2011	Liner differential equations and problems related to applications of differential	CO1	1	2		3		1						
		BSC-EE2012	Perform vector differentiation and integration.	CO2	1	2		2								
		BSC-EE2013	Find Laplace transform and Inverse Laplace transform of various functions	CO3	1	3				2			3			
		BSC-EE2014	Apply Laplace transform to solve Linear differential equations.	CO4	1								2			
		BSC-EE2015	Find Z-Transform and inverse Z-transform by using different properties.	CO5	1											
		BSC-EE2016	Find Expansions of function by using Fourier series.	CO6	1											

SEM:03

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
2	ELECTRICAL ENGINEERING MATERIALS AND ENERGY CONVERSION	PCC-EE.1	including their resistivity, thermal conductivity, and applications in electrical systems.	CO1	3	1	1							2	1	2
		PCC-EE.2	dielectric gases, liquids, and solids, and their role in electrical devices and insulation	CO2	3	1	1							2	1	2
		PCC-EE.3	ferromagnetic behavior, Weiss theory, and their use in electrical devices.	CO3	3	1	2							2	1	2
		PCC-EE.4	mechanisms of polarization and internal fields in solids and liquids.	CO4	3	1	1							2	1	2
		PCC-EE.5	in magnetic systems, singly and doubly excited systems, and the concept of electromagnetic	CO5	3	1	2							2	1	2
		PCC-EE.6	generation, fuel cells, thermoelectric generators, and thermionic converters.	CO6	3	1	2							2	1	2

SEM:03

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		CO-PO Mapping
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
3	ANALOG ELECTRONICS ENGINEERING	PCC-EE.1	Explain various semiconductor devises and its applications.	CO1	3	3	2									3
		PCC-EE.2	Illustrate & Compare BJT and JFET.	CO2	3	3	2									3
		PCC-EE.3	Classify feedback amplifiers &analyze various oscillators	CO3	3	3	2	2							2	3
		PCC-EE.4	List op-amp characteristics and distinguish its configurations	CO4	3	2	2								3	3
		PCC-EE.5	Explain applications of op-amp.	CO5	3	2								2		3
		PCC-EE.6	Interpret applications of IC 555 timers	CO6	3	3	2									3

SEM:03

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		CO-PO Mapping
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
4	BASIC CIRCUIT THEORY	PCC-EE.1	problems	CO1	3	3							3	3	3
		PCC-EE.2	Understand and Apply network theorems to solve problems.	CO2	3	3							3	3	3
		PCC-EE.3	Understand Initial and steady state condition in first order, second order circuits and apply the conditions to solve the problems.	CO3	3	3							3	3	3
		PCC-EE.4	Understand resonance circuits and solve problem on resonance circuit.	CO4	3	3							3	3	3
		PCC-EE.5	Understand two port networks and Solve problem on two port networks	CO5	3	3							3	3	3
		PCC-EE.6	Apply Laplace Transformation for network solution.	CO6	3	3							3	3	3

SEM:03

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		CO-PO Mapping
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
		PCC-EE2051	Explain various concepts of measuring instruments	CO1	3	1	2									3

5	ELECTRICAL MEASUREMENT	PCC-EE2052	Explain different types of secondary instruments	CO2	2	2	1									2
		PCC-EE2053	Determine different methods for measurement of resistance, inductance & Capacitance	CO3	3	2		1	2							2
		PCC-EE2054	Describe various methods for measurement of Power & energy.	CO4	2	3										2
		PCC-EE2055	Illustrate & Explain concept of displacement measurement	CO5	3	2		2								2
		PCC-EE2056	Describe various modern techniques used in measurement	CO6	3	2		2								2

SEM:04					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
6	DCMT	PCC-EE.1	To understand different types of control system and effect of feedback	CO1	3	3	3								1	3
		PCC-EE.2	Explain time & frequency domain analysis for different control systems	CO2	3	3									1	3
		PCC-EE.3	To understand concept of the root locus	CO3	3											3
		PCC-EE.4	To understand concept of frequency response analysis	CO4	3	3									1	3
		PCC-EE.5	To understand classical control design techniques	CO5	3											3
		PCC-EE.6	describe state variables 5 design model for control system	CO6	3	3									1	3

SEM:04					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
7	POWER ELECTRONICS	PCC-EE.1	semiconductor devices	CO1	3								3	3		3
		PCC-EE.2	Understand the operation of single-phase and three-phase rectifiers, including their working principles.	CO2	3	1							3	3		3
		PCC-EE.3	Understand the operation of various types AC-DC Converters.	CO3	3	1							3	3		3
		PCC-EE.4	Understand the operation of various types of DC-DC Converters.	CO4	3	1							3	3		3
		PCC-EE.5	Understand the operation of various types of DC-AC Converters.	CO5	3								3	3		3
		PCC-EE.6	Understand the operation of cyclo-Converters and Matrix Converters.	CO6	3								3	3		3

SEM:04					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
8	POWER SYSTEM - I	PCC-EE.1	UNDERSTAND BASICS OF POWER SYSTEM	CO1	3								3	3		3
		PCC-EE.2	MODELING & REPRESENTATION OF THE SYSTEM COMPONENTS USED IN POWER SYSTEM	CO2	3	1							3	3		3
		PCC-EE.3	UNDERSTAND USE OF CABLES IN DISTRIBUTION NETWORK	CO3	3	1							3	3		3
		PCC-EE.4	CONCEPT OF DESIGNING TRANSMISSION LINE PARAMETERS	CO4	2	1							3	3		3
		PCC-EE.5	THE BASIC CONCEPT OF POWER FACTOR IMPROVEMENT	CO5	3								3	3		3
		PCC-EE.6	ANALYZE PERFORMANCE OF GENERATION & TURBINES AND ECONOMIC ASPECTS OF POWER GENERATION	CO6	2								3	3		3

SEM:04					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
9	ELECTROMAGNETIC	PCC-EE.1	APPLY KNOWLEDGE OF MATHEMATICS, SCIENCE, AND ENGINEERING TO DESIGN, ANALYZE AND CONTROL THE DIFFERENT SYSTEMS	CO1	3	3	2			3	2					2
		PCC-EE.2	EXPLAIN TIME & FREQUENCY DOMAIN ANALYSIS FOR DIFFERENT CONTROL SYSTEMS	CO2	3	3				3						2
		PCC-EE.3	DEMONSTRATE & COMPARE DIFFERENT CONTROL SYSTEMS	CO3	3	3	2			2	2		3	2		3
		PCC-EE.4	DESCRIBE STATE VARIABLES 5 DESIGN MODEL FOR CONTROL SYSTEM	CO4	3	3	2			2	2		2	3		2

SEM:04					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
10	CONTROL SYSTEM –I	PCC-EE.1	Apply the principles of control systems, including the need for and classification of control sys	CO1	3	3				1	1					3
		PCC-EE.2	Analyze time response of standard test signals for First and Second-order systems.	CO2	3	3			2	1	1					3
		PCC-EE.3	Explain the root locus concept and Routh's stability criterion for stability analysis.	CO3	3	3			2	1	1					3
		PCC-EE.4	Generate Bode plots and Nyquist plots to perform stability analysis.	CO4	3	3			2	1	1					3
		PCC-EE.5	Design Lag, Lead, and Lead-Lag controllers in the frequency domain and PID control system	CO5	3	2				1	1					3

| | | PCC-EE.6 | Understand the concept of state variables, and state models. | CO6 | 3 | 2 | | | | 1 | 1 | | | | | 2 |

			SEM:05						CO-PO Mapping							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
11	DIGITAL ELECTRONICS AND MICROCONTROLLER	PCC-EE3011	Theorems, Properties of Boolean Algebra.	CO1	1	2	2									2
		PCC-EE3012	Understand, Solve and Analyze4 2, 3 and 4 variable K-Map	CO2	2	1	1									1
		PCC-EE3013	Design and analyze different types Adders, Substractors, FlipFlops and Counters.	CO3	2	1	1									2
		PCC-EE3014	Apply Knowledge and Demonstrate various addressing modes and data transfer instructions	CO4	2	1	2									2
		PCC-EE3015	assembler utility of a microcontroller	CO5	1	2	2									1
		PCC-EE3016	Design and Analyze different types of Interfacing	CO6	2	1	1									2

			SEM:05						PO							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
12	AC MACHINES	PCC-EE3021	Analyze the performance of 3-phase induction motors	CO1	3	3	2									3
		PCC-EE3022	Determine and analyze the Losses and efficiency and performance of alternators	CO2	3	2	3									3
		PCC-EE3023	familiarize with principle of operation and application of 1 -phase induction motors.	CO3	3	2				2						3
		PCC-EE3024	different applications	CO4	3	1	3					1				3
		PCC-EE3025	Analyze and Evaluate performance of different types of alternators	CO5	3	3	3	3								3
		PCC-EE3026	Analyze the performance of 3-phase induction motors	CO6	3	3	3						2			3

			SEM:05						CO-PO Mapping							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
13	POWER SYSTEM-II	PCC-EE3031	Understand power system components using per-unit representation and impedance diagrams.	CO1	3	2	2	2						1	2	1
		PCC-EE3032	Perform symmetrical fault analysis for circuit breaker selection and fault MVA calculation.	CO2	3	3		3	2					1	2	1
		PCC-EE3033	Apply symmetrical component theory to model power system sequence networks.	CO3	3	3	2							1	2	1
		PCC-EE3034	Understand unsymmetrical faults using symmetrical components and bus impedance matrices.	CO4	3	3	2	3						1	2	1
		PCC-EE3035	Solve load flow problems using iterative methods like Gauss-Seidel and Newton-Raphson.	CO5	3	3		3	3					1	2	2
		PCC-EE3036	ENGINEERING ESSENTIALS.	CO6	2	2		2						1	2	2

			SEM:05						CO-PO Mapping							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
14	ADVANCED CONTROL SYSTEM	PCC-EE3041	The students will be able to design a compensation techniques like Lag, Lead and Lead-Lag (	CO1	3	2	2									
		PCC-EE3042	Derive and Design a Lead, Lag, and Lead-Lag Compensation using Root Locus	CO2	3	2	2									
		PCC-EE3043	Derive and Design a Lead, Lag, and Lead-Lag Compensation using Bode Plot	CO3	3	2	2									
		PCC-EE3044	and its Transfer function	CO4	3	2	2									
		PCC-EE3045	controller, Pole placement technique by Transformation method, Direct Substitution Method	CO5	3	2	2									
		PCC-EE3046	sampling, mapping between S-Plane & Z-Plane, stability analysis, transient & steady state	CO6	3	2	2									

			SEM:05						CO-PO Mapping							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
15	SIGNALS AND SYSTEMS	S&S.1	and problems related to the signals	CO1	3	3							3	3		3
		S&S.2	Explain concept of LTI system and Evaluate convolution.	CO2	3	3							3	3		3
		S&S.3	Make use of Laplacetransform to analyze CT signals and systems.	CO3	3	3							3	3		3
		S&S.4	Make use of Z transforms to analyze DT signals and systems.	CO4	3	3							3	3		3
		S&S.5	Determine Fourier transforms for CT & DT.	CO5	3	3							3	3		3
		S&S.6	Explain sampling theorem in time domain and frequency domain.	CO6	3	3							3	3		3

			SEM:05						CO-PO Mapping							
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
	ELECTRICAL	OCE-EE-3011	Apply Knowledge to maintain the different electrical appliances	CO1	3	3									1	2
		OCE-EE-3012	Construct And repair domestic appliances	CO2	3	3									1	2

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
16	APPLIANCES AND LUMINORIES (Open Elective -I)	OCE-EE-3013	Design and troubleshooting of UPS and Inverters	CO3	3	3	3	3								
		OCE-EE-3014	Illustrate basic concepts of illumination.	CO4	3	3	3	3								
		OCE-EE-3015	Designing of lighting for domestic purpose	CO5	3	3									1	2
		OCE-EE-3016	Designing of lighting for special purpose	CO6	3	3									1	2

SEM:06					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
17	DIGITAL SIGNAL PROCESSING	PCC-EE3071	Understand DFT, Convolution, Algorithms and apply them to analysis of signals.	CO1	3	3							3	3		3
		PCC-EE3072	Understand FIR filters and design filters using windowing techniques.	CO2	3	3	3						3	3		3
		PCC-EE3073	Understand IIR filters and design filters using various methods.	CO3	3	3	3						3	3		3
		PCC-EE3074	Illustrate and distinguish DSP processors.	CO4	3									2	2	3
		PCC-EE3075	Define and explain various modulation techniques.	CO5	3									2	2	3

SEM:06					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
18	ELECTRICAL MACHINE DESIGN	PCC-EE3081	Recognize thefundamentals and essential standards to design electrical machine	CO1	1	2	3			2	2					2
		PCC-EE3082	Design of entire transformer in detail	CO2	2	2	2			1	2					2
		PCC-EE3083	Design of armature, field winding and Commutator of DC machines	CO3	2	2	2			2	1					2
		PCC-EE3084	Design of stator core ,stator winding and rotor bars of three phase induction motor	CO4	3	2	2			1	1					3
		PCC-EE3085	Design of different parts of synchronous machine	CO5	2	2	3			2	1					2
		PCC-EE3086	Computer application .	CO6	2	2	2			2	1					2

SEM:06					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
19	POWER SYSTEM STABILITY AND CONTROL	PCC-EE3091	Understand Power System Dynamics Problems, Current Status & Recent Trends.	CO1	3	2								2	2	
		PCC-EE3092	To understand and apply various methods to find transient stability of the power systems.	CO2	3	2			2					2	2	
		PCC-EE3093	To understand various methods of improving stability	CO3	3									2	2	
		PCC-EE3094	To understand frequency and voltage control strategies for power system.	CO4	3				2					2	2	
		PCC-EE3095	power system operation	CO5	3	2								2	2	
		PCC-EE3096	To understand power system security and factors affecting power system security.	CO6	3									2	2	

SEM:06					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
20	ELECTRICAL DRIVES I	PCC-EE3101	Understand the concept, classification, Parts and advantages of electrical drives with types of loads and conditions of dynamic and stability considerations.	CO1	3	2	2	2						1	2	1
		PCC-EE3102	Basics of DC motor and the speed control methods of D.C. motor by Single & Three-Phase Converters.	CO2	3	3		3	2					1	2	1
		PCC-EE3103	Outline of Chopper operation, configuration and control techniques to control the DC Motor.	CO3	3	3	2							1	2	1
		PCC-EE3104	Appraise the Voltage and frequency control method of Induction motor drive in Stator side control.	CO4	3	3	2	3						1	2	1
		PCC-EE3105	Appraise the rotor resistance control method of Induction motor drive in Rotor side control.	CO5	3	3		3	3					1	2	2
		PCC-EE3106	Appraise the speed and frequency control method of synchronous motor.	CO6	2	2		2						1	2	2

SEM:06					CO-PO Mapping											
SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
21	ELECTRICAL INSTALLATIONS TESTING AND	PCC-EE3111	Read and interprets electrical installationdrawings	CO1	3											3
		PCC-EE3112	Understand and apply IErules	CO2	3											3
		PCC-EE3113	To learn testing methods of various electricalequipment	CO3	3	3			1							3

	MAINTENANCE	PCC-EE3114	Describe corrective and preventive maintenance of electricalequipment's	CO4	3											3

SEM:06

SR NO	SUBJECT	Subject Code	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
22	ELECTRICAL ENERGY AUDIT AND CONSERVATION (Open Elective -II)	OCE-EE3021	Prepare energy flow diagrams and energy audit report .	CO1	3	2				2					2	3
		OCE-EE3022	Carryout energy audit for Mechanical Systems	CO2	3	2				2					2	3
		OCE-EE3023	Relevant tariff for reducing losses in facilities.	CO3	3	2				2					2	3
		OCE-EE3024	Interpret energy conservation policies in India	CO4	3	2				2					2	3
		OCE-EE3025	Identify and evaluate the energy conservation opportunities in different electric system	CO5	3	2				2					2	3
		OCE-EE3026	Identify and assess energy conservation opportunities in thermal system.	CO6	3	2				2					2	3

SEM:07

Sl. No	SUBJECT	CO NUMBER	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
23	FLEXIBLE AC TRANSMISSION SYSTEM	PCC-EE4011	of FACTS and basics of types of FACTS controller	CO1	3		1									
		PCC-EE4012	understand the Statics shunt compensators	CO2	3		1									
		PCC-EE4013	understand the Static Synchronous compensator STATCOM	CO3	3		1									
		PCC-EE4014	understand the Static Series compensators	CO4	3		1									
		PCC-EE4015	understand the Static voltage and phase angle regulation TCVR and TCPAR	CO5	3		1									
		PCC-EE4016	understand the combined compensator: UPFC and IPFC.	CO6	3		1									

SEM:07

Sl. No	SUBJECT	CO NUMBER	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
24	POWER QUALITY AND HARMONICS	PCC-EE4021	understand power quality and Power Quality related issues in distribution systems	CO1	3	2									1	2
		PCC-EE4022	define harmonics and causes for generation of harmonics	CO2	3	2									1	2
		PCC-EE4023	discuss about different types of filters used for harmonic reduction	CO3	3	2									1	2
		PCC-EE4024	discuss about Mitigation of Voltage Sag	CO4	3	2									1	2
		PCC-EE4025	determine Instrumentation techniques for Harmonic Measurement	CO5	3	2									1	2
		PCC-EE4026	Understand power quality monitoring	CO6	3	2									1	2

SEM:07

Sl. No	SUBJECT	CO NUMBER	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0		2
25	Computer Methods in Power System	PCC-EE4031	Calculate impedance and admittance matrices	CO1	1	2	1					1				3
		PCC-EE4032	To learn calculation of Impedance and admittance matrix	CO2	1	1	3				1	2				3
		PCC-EE4033	Study load flow studies	CO3	1	2	1				2	1				3
		PCC-EE4034	TO LEARN LOAD FLOW STUDIES	CO4	1	2	1		1		1	2				2
		PCC-EE4035	FIND FAULT CURRENT USING 2 COMPONENT THEORY	CO5	2	1	2				1	2				2
		PCC-EE4036	TO LEARN FAULT ANALYSIS	CO6	1	2	1				1	1				3

SEM:07

Sl. No	SUBJECT	CO NUMBER	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
26	SWITCHGEAR AND PROTECTION	PCC-EE4041	components and voltage characteristics.	CO1	3	2	1	1						2	2	3
		PCC-EE4042	breakers, including oil, air blast, SF6, vacuum, and HVDC types.	CO2	3	1	1	1						2	2	3
		PCC-EE4043	types, such as induction disc, induction cup, and microprocessor-based relays.	CO3	3	2	1	1						2	2	3
		PCC-EE4044	radial and ring mains, including directional relays.	CO4	3	2	1	1						2	2	3
		PCC-EE4045	restraint, and Buchholz relay functions.	CO5	3	2	1	1						2	2	3
		PCC-EE4046	surge arrestors and insulation coordination for system reliability.	CO6	3	2	1	1						2	2	3

SEM:07

Sl. No	SUBJECT	CO NUMBER	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
	INDUSTRIAL	PCC-EE4051	Exhibit the corporate culture/ethics in their work-space/career.	CO1	3	3	2	2	2	3	3	3	3	3	3	3
		PCC-EE4052	Identify the size and scale of operations in Industry.	CO2	3	3	2	2	2	3	3	3	3	3	3	3

SEM:07 (continuation of item 27) — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
27	INDUSTRIAL TRAINING & PRESENTATION	PCC-EE4053	Accomplish allotted tasks within deadlines.	CO3	3	3	2	2	2	3	3	3	3	3	3	3
		PCC-EE4054	Demonstrate an understanding of various constraints in industry.	CO4	3	3	2	2	2	3	3	3	3	3	3	3
		PCC-EE4055	Learn problem solving techniques and also work as a team.	CO5		3	2	2	2	3	3	3	3	3	3	3
		PCC-EE4056	Apply the knowledge learnt in their own career	CO6	3	3	2	2	2	3	3	3	3	3	3	3

SEM:07 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
28	ELECTRIC VEHICLE (Open Elective I)	OCE-EE4011	Understand working of different configurations of electric vehicles	CO1	3					3	3	3	3	3		3
		OCE-EE4012	Understand hybrid vehicle configuration and its components, performance analysis	CO2	3					3	3	3	3	3		3
		OCE-EE4013	Understand of electric vehicle drive systems	CO3	3					3	3	3	3	3		3
		OCE-EE4014	Discuss about the different types of energy storage system.	CO4	3					3	3	3	3	3		3
		OCE-EE4015	Describe about the battery characteristic & parameters.	CO5	3					3	3	3	3	3		3
		OCE-EE4016	Explain about the battery testing, disposal and recycling.	CO6	3					3	3	3	3	3		3

SEM:08 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
29	Management & Entrepreneurship Development	PCC-EE4071	Understand the concept and significance of project.	CO1	3								2	3	3	3
		PCC-EE4072	Understand management of functional dimensions of Project	CO2	3									3	3	3
		PCC-EE4073	Analyze risk and opportunities involved in project management.	CO3	3								3	3	3	3
		PCC-EE4074	Prepare feasibility report for a project.	CO4	3									2	3	3
		PCC-EE4075	TO UNDERSTAND THE ROLE OF MODERN SMALL BUSINESS ENTERPRISES	CO5	3									2	3	3
		PCC-EE4076	UNDERSTAND THE CONCEPT AND SIGNIFICANCE OF PROJECT MANAGEMENT	CO6	3								3	3	3	3

SEM:08 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
30	H.V.D.C. SYSTEMS	PCC-EE4081	power transmission.	CO1	3		1		3							
		PCC-EE4082	To analyze HVDC converters.	CO2	3		2		3							
		PCC-EE4083	To study about MTDC system.	CO3	3		1		3							
		PCC-EE4084	To analyze harmonics and design of filters.	CO4	3		1		3							
		PCC-EE4085	To learn about HVDC cables and reactive power control.	CO5	3		3		3							

SEM:08 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
31	Extra High Voltage AC Transmission	PCC-EE4091	Calculate EHVAC line parameters	CO1	3	3		2								3
		PCC-EE4092	Study voltage gradients and corona effects	CO2	3	3		2								3
		PCC-EE4093	Find over-voltages and methods of protection	CO3	3	3		2								3
		PCC-EE4094	STUDY OF LIGHTNING AND LIGHTNING PROTECTION & INSULATION CO-ORDINATIONS	CO4	3	3		2								3
		PCC-EE4095	STUDY OF OVER VOLTAGE IN EHV SYSTEM CAUSED BY SWITCHING OPERATIONS	CO5	3	3		2								3
		PCC-EE4096	STUDY OF POWER FREQUENCY VOLTAGE CONTROL AND OVER VOLTAGES	CO6	3	3		2								3

SEM:08 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2
32	ELECTRICAL GENERATION & UTILIZATION	PCC-EE4101	To understand the concept Electrical Energy Generation using Conventional Energy Sources	CO1	1	2	2									2
		PCC-EE4102	To analyze Solar Energy application.	CO2	2	1	3									3
		PCC-EE4103	To study about Electric traction	CO3	2	1	2		1							2
		PCC-EE4104	TO UNDERSTAND ELECTRIC HEATING AND WELDING	CO4	2	2	1				1					1
		PCC-EE4105	TO EXPLAIN THE AC / DC ELECTRIC TRACTION	CO5	1	2	2	1								2
		PCC-EE4106	TO UNDERSTAND TRAIN MOVEMENT AND ENERGY CONSUMPTION	CO6	2	2	2									2

SEM:08 — CO-PO Mapping

Sl. No	Subject	CO NUMBER	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	0	1	2

33	Electrical Maintenance and Electrical Energy Audit	OCE-EE4021	Comply with published electrical codes and safety standards	CO1	3	2	1									1
		OCE-EE4022	person.	CO2	3	3	1									
		OCE-EE4023	Troubleshoot, repair, and conduct routine maintenance of electrical systems/equipment.	CO3	3	2	1									1
		OCE-EE4024	with energy conservation and energy auditing	CO4	3	2										
		OCE-EE4025	intensive industrial equipment"s.	CO5	3											
		OCE-EE4026	conservation solutions adopted.	CO6	3											1

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National Assessment and Accreditation Council (NAAC)

Key Indicator - 2.6.1

Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.

Academic Year: 2024-25

Program: DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	APPLIED MATHEMATICS III (BSC-CS301)	BSC-CS301.1	Describe the statistical data numerically by using Lines of regression and Curve fittings.	CO1	3	2			2								3	
		BSC-CS301.2	Solve basic problems in probability theory, including problems involvingthe binomial, Poisson, and	CO2	3	3											3	2
		BSC-CS301.3	Calculate numericalIntegration.	CO3	3	2			2								3	
		BSC-CS301.4	Define fuzzy sets using linguistic words and represent these sets by membership functions, convexity,	CO4	2	2											3	
		BSC-CS301.5	Solve examples on the principle in performing fuzzy number arithmeticoperations such as Addition,	CO5	3	2			2								2	3
		BSC-CS301.6	Solve assignment problems by using different techniques of operationresearch.	CO6	3	3		2						2				3

SEM:III — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
2	DISCRETE MATHEMATICS AND STRUCTURE (PCC-CS302)	PCC-CS302.1	Apply logic concepts in designing aprogram.	CO1	3	2			2		2			1	1		2	
		PCC-CS302.2	Illustrate basic set concepts & apply operations onset.	CO2	3	2								1	1			
		PCC-CS302.3	Minimize the BooleanFunction.	CO3	3	2								1	1			
		PCC-CS302.4	Apply basic concepts of probability to solve real worldproblem.	CO4	3	2			3		2			1	1		2	
		PCC-CS302.5	Represent data structures using graph concepts.	CO5	3	2			3		2			1	1		1	
		PCC-CS302.6	Design abstract machine, detectdeadlocks.	CO6	3	2			3		2			1	1		1	

SEM:III — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
3	DATA STRUCTURES (PCC-CS303)	PCC-CS303.1	IMPLEMENT VARIOUS LINEAR DATA STRUCTURES.	CO1	2		3	2	3			2	3	2	3	2	2	2
		PCC-CS303.2	IMPLEMENT VARIOUS NONLINEAR DATA STRUCTURES.	CO2	3	2				2	3	2		2	3			1
		PCC-CS303.3	SELECT APPROPRIATE SORTING AND SEARCHING TECHNIQUES FOR A GIVEN PROBLEM AND	CO3	2		2	1	3	2			3	3	1	2	3	3
		PCC-CS303.4	DEVELOP SOLUTIONS FOR REAL WORLD PROBLEMS BY SELECTING APPROPRIATE DATA	CO4	3	3					1	3	2	1			1	2
		PCC-CS303.5	ANALYZE THE COMPLEXITY OF THE GIVEN ALGORITHMS	CO5	3		3	3		3	1			1	3		1	3

SEM:III — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
4	COMPUTER NETWORKS-1 (PCC-CS304)	PCC-CS304.1	Understand concept of computer network, OSI and TCP/IP layered architecture.	CO1	3				1				2	2		3		1
		PCC-CS304.2	Understand data link layer, Elementary DLL Protocols, Understand and apply various techniques in order to lo	CO2	3	3	2		1				2	2		2		2
		PCC-CS304.3	Understand MAC Sub-layer and IEEE 802.* Standards	CO3	3								2	2		2		3
		PCC-CS304.4	Understand network layer in detail and apply various techniques to solve network related issues	CO4	3	3	3		3				2	2	2	3		3
		PCC-CS304.5	Understand IP Protocol and analyze various protocol structure using network analyzer tool	CO5	2	3	2		3				2	2	2	3		3

SEM:III — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
5	MICROPROCESSORS (PCC-CS305)	PCC-CS305.1	Describe the Architecture of 8085 microprocessors andmicrocontroller	CO1	1	1	1	2	1	2		3	1			2	1	2
		PCC-CS305.2	Classify the 8086 Assembly Instructions set and use in Assembly languagePrograms	CO2	1	3		3	2		1			1	2		3	2
		PCC-CS305.3	Explain Programming model's of 8086 microprocessors	CO3	3		1		2		3			2	2		3	2
		PCC-CS305.4	Classify the 8086 Assembly Instructions set and use in Assembly languagePrograms	CO4	2		2		3				1	2	1	3	1	2
		PCC-CS305.5	Understand the higher processor architecture	CO5	3	2		2	1			3		2			2	1

SEM:III — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	C	PCC-CS306.1	Students will be able to develop simple applications in C using basic constructs	CO1	1	1		1	3	3	1		2	1	2		2	3
		PCC-CS306.2	Students will be able to design and implement applications in C using Arrays and Strings	CO2	3		2	3	1	1			1	2		3		2

PROGRAMMING (PCC-CS306)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS306.3	Students will be able to design and implement applications in C using Functions	CO3	2	2		2	2				2	3	1	2	2	2
PCC-CS306.4	Students will be able to design and implement applications in C using Pointers	CO4	2	1	2		2	3				3				3
PCC-CS306.5	Students will be able to develop applications in C using Structures	CO5	3	3	3	3		3	3	2	2	2	3	1	1	2
PCC-CS306.6	Students will be able to design applications using sequential and random access file processing	CO6	3		3	1	1	3					3	3	3	3

SEM:III

SOFT SKILLS (HM-CS307)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
HM-CS307.1	Apply effective verbal and non-verbal communication techniques, including active listening and feedback, to	CO1									3	3	2	2		3
HM-CS307.2	Analyze personal strengths and weaknesses using SWOT analysis to develop self-confidence, positive	CO2		2							2	2	2	1	3	2
HM-CS307.3	Evaluate different leadership styles and team development stages to enhance team performance and overcome	CO3								2	3	3	2	3	1	3
HM-CS307.4	Create professional emails, reports, and resumes that meet workplace communication standards	CO4									2	3	1	2		3
HM-CS307.5	Apply time and stress management strategies to improve productivity and well-being in professional settings.	CO5									2	3	2	2	3	2
HM-CS307.6	Demonstrate appropriate professional etiquette and ethical behavior in various formal and digital	CO6									3	3	3	2	3	3

SEM:IV — CO-PO Mapping

AUTOMATA THEORY (PCC-CS401)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS401.1	Understand basic concepts of Regular Language and Regular Expressions	CO1	3	2	1	1	2							2	3	2
PCC-CS401.2	Apply suitable abstract machines to recognize and process formal languages effectively	CO2	3	3	2	2	2							2	3	3
PCC-CS401.3	Construct and analyze Context Free Grammars by applying operations	CO3	3	3	3	2	2							2	3	3
PCC-CS401.4	Apply parsing concepts for syntaxanalysis	CO4	3	3	3	3	2							2	3	2
PCC-CS401.5	Apply the Pumping Lemma to distinguish CFLs from non-CFLs and analyze their closure properties	CO5	3	3	2	2	2							2	3	2
PCC-CS401.6	Construct and analyze Turing Machines.	CO6	3	3	3	3	2							2	3	3

SEM:IV — CO-PO Mapping

COMPUTER NETWORK-II (PCC-CS402)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS402.1	Program the client server model using sockets	CO1	3		3											
PCC-CS402.2	Understand and apply next generation protocol and addressing model	CO2	3	2												
PCC-CS402.3	Elaborate the fundamentals of Domain Name Systems	CO3	3	2	3											
PCC-CS402.4	Apply concepts of Remote login and FTP in network applications	CO4	3		3		2									
PCC-CS402.5	Learn fundamentals of web, HTTP, and e-mail communication protocols	CO5	3													

SEM:IV — CO-PO Mapping

COMPUTER ORGANIZATION AND ARCHITECTURE (PCC-CS403)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS403.1	Understand the basic concepts of computer architecture and organization and history of computer system.	CO1	3								2	2		2	2	1
PCC-CS403.2	Understand the concept of I/O organization.	CO2	3								2	2		2	2	1
PCC-CS403.3	Apply the different algorithms to perform arithmetic operations.	CO3	3	2							2	2		2	2	1
PCC-CS403.4	Understand the design issues in the development of processor.	CO4	3								2	2		2	2	2
PCC-CS403.5	Understand pipeline concept and hazard handling	CO5	3								2	2		2	2	2

SEM:IV — CO-PO Mapping

OPERATING SYSTEMS - I (PCC-CS404)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS404.1	Understand the core functions, types, and structures of operating systems and their role in managing system	CO1	3								2	2		3		1
PCC-CS404.2	Understand processes, threads, and synchronization techniques to manage race conditions and critical	CO2	3								2	2		3		1
PCC-CS404.3	Understand process scheduling and different scheduling policies	CO3	3								2	2		3		1
PCC-CS404.4	Learn about deadlock, its causes, and methods for detection, resolution, prevention, and avoidance	CO4	3								2	2		3		1
PCC-CS404.5	Understand memory management techniques, including allocation, segmentation, paging, and virtual	CO5	3								2	2		3		1

SEM:IV — CO-PO Mapping

SOFTWARE ENGINEERING (PCC-CS405)

CO No.	Course Outcomes (COs)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS405.1	Comprehend systematic methodologies of SDLC(Software Development LifeCycle)	CO1	3	3	2	2	1	1			2			1	3	2
PCC-CS405.2	Discriminate competing and feasible system requirements indicating correct real world problem scope and	CO2	3	3	3	3	2	1	1		2			2	3	3
PCC-CS405.3	Prepare SRS document for a project	CO3	3	2	2	2	1				1		2	2	2	3
PCC-CS405.4	Apply software design and development techniques	CO4	3	2	2	3	2	1	1		2			2	3	3
PCC-CS405.5	Develop a quality software project through effective team-building, planning, scheduling and risk	CO5	3	3	3	2	3	2	2	1	2				3	3
PCC-CS405.6	Understand testing methods at each phase ofSDLC	CO6	3	3	2	2	2	1			1				2	2

SEM:IV — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
13	OBJECT ORIENTED PROGRAMMING (PCC-CS406)	PCC-CS406.1	Use the characteristics of an object-oriented programming language in a program	CO1	3	2	2	1					2	2		2	2	2
		PCC-CS406.2	Use the basic object-oriented design principles in computer problem solving	CO2	3	2	2	2					2	2		2	2	2
		PCC-CS406.3	Use the basic principles of software engineering in managing complex software project.	CO3	3	2	2	2					2	2		2	2	2
		PCC-CS406.4	Develop program with advance features of the C++ programming language	CO4	2	2	2	1					2	2		2	2	2
		PCC-CS406.5	Apply principle of various types of inheritance and virtual function to develop C++ program	CO5	3	2	2	1					2	2		2	2	2
		PCC-CS406.6	Apply principle of templates & fundamentals of Exception Handling to develop C++ program	CO6	3	2	2	1					2	2		2	2	2

SEM:IV — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
14	MINI PROJECT (PW-CS407)	PW-CS407.1	Define the problem statement	CO1	3	2	2	1	1	1			1			1	2	3
		PW-CS407.2	Organize, plan and prepare detailed project activities	CO2	3	3	3	2	1	1	1		1			2	3	3
		PW-CS407.3	Construct flowchart and system architecture based on project description	CO3	3	3	3	2	1	2	1		2			2	3	3
		PW-CS407.4	Implement the solution for the problem using C, C++	CO4	3	3	3	3	2	2	1	1	2			3	3	3

SEM:IV — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
15	ENVIRONMENTAL STUDIES (MC-CS408)	MC-CS408.1	UNDERSTANDING OF ISSUES RELATED TO ENVIRONMENT AND THEIR IMPACT ON THE	CO1	3	3	2			3	2			3	2			
		MC-CS408.2	UNDERSTANDING ON THE SOLUTIONS RELATED TO THE ENVIRONMENTAL PROBLEMS	CO2	2	3			3					3				3
		MC-CS408.3	UNDERSTANDING OF DIFFERENT COMPONENT OF ENVIRONMENT AND THEIR FUNCTION AND	CO3	3	3							3	2	3			2
		MC-CS408.4	STUDENT WILL BE ABLE TO– ? COMPREHEND THE IMPORTANCE OF ECOSYSTEM AND	CO4					3	1			2					
		MC-CS408.5	TO CORRELATE THE HUMAN POPULATION GROWTH AND ITS TREND TO THE ENVIRONMENTA	CO5														
		MC-CS408.6	IDENTIFY DIFFERENT TYPES OF ENVIRONMENTAL POLLUTION AND CONTROL MEASURES	CO6														

SEM:V — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
16	INFORMATION SECURITY (PCC-CS501)	PCC - CS501.1	Understand principles of Crypto-systems.	CO1	3	2										2		3
		PCC - CS501.2	Compare and analyze various security services and mechanisms.	CO2	3	2	2		2							2		3
		PCC - CS501.3	Apply and use the features of PGP, S/MIME, DSA, IPSec, SSL in their profession.	CO3	3	2				2						2		3
		PCC - CS501.4	Take precautions of their personal computing system from possible threats and attacks	CO4	3	2			2							2		3
		PCC - CS501.5	Explore newer vulnerabilities and provide the solutions to them	CO5	2	2										2		3

SEM:V — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
17	SYSTEM PROGRAMMING (PCC - CS502)	PCC - CS502.1	Explore newer vulnerabilities and provide the solutions to them	CO1	2								1	1		1		
		PCC - CS502.2	Student will be able to understand the basics of system programs like editors, compiler, assembler, linker,	CO2	2								1	1		1		
		PCC - CS502.3	Student will be able to understand the basics of system programs like editors, compiler, assembler, linker, load	CO3	2								1	1		1		
		PCC - CS502.4	Students able to understand the various phases of compiler and compare its working with assembler.	CO4	2								1	1		1		
		PCC - CS502.5	Students understand how linker and loader create an executable program from an object module created by ass	CO5	2								1	1		1		
		PCC - CS502.6	Students will be able to create graphical user interfaces for basic programs and learn about terminal input/outp	CO6	2								1	1		1		

SEM:V — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
18	OBJECT ORIENTED MODELING AND DESIGN (PCC - CS503)	PCC - CS503.1	Understand the models of software systems.	CO1	3	2	2	1	1	1				1		2	3	2
		PCC - CS503.2	Understanding dynamic & functional modeling of a system	CO2	3	2	2	1	2					1		2	3	3
		PCC - CS503.3	Design a software system using OMT (Object Modeling Technique) methods	CO3	2	2	3	2	2				1	2	1	2	3	3
		PCC - CS503.4	Design a software system using UML (Unified Modeling Language) methods	CO4	2	2	3	2	3				1	2	1	2	3	3
		PCC - CS503.5	Able to draw all behavioral model diagram	CO5	1		3	2	2				1	2	1	2	2	3
		PCC - CS503.6	Able to understand architectural modeling of a system	CO6	2	2	3	2	2				1	2	1	3	3	3

SEM:V — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
19	COMPUTER ALGORITHMS (PCC - CS504)	PCC - CS504.1	Understand and demonstrate algorithm design methods with analysis	CO1	3	3	3	2								3	2	2
		PCC - CS504.2	Devise algorithm for given problem statement and analyze its space and time complexity by using recurrence	CO2	3	2	2	2								2	3	2
		PCC - CS504.3	Categorize the problem to determine polynomial and non-polynomial based on its natureCategorize the proble	CO3	3	3	3	2								2	2	3
		PCC - CS504.4	Understand and demonstrate basic concepts of parallel algorithms	CO4	3	2	2	2								2	2	3

SEM:V

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
20	INTERNET OF THINGS (OEC - CS506)	OEC - CS506.1	Understand basic concepts of IoT	CO1	3							2	2					
		OEC - CS506.2	Understand the IoT mechanisms and implement RFID technology.	CO2	3							2	2					
		OEC - CS506.3	Understand the principle of RFID and identification technology.	CO3	3	2	1					2	2					
		OEC - CS506.4	Understand the IoT hardware and software systems and apply using C, C++, and Python.	CO4	3							2	2					
		OEC - CS506.5	Understand the different Communication Technologies of IoT	CO5	3							2	2					
		OEC - CS506.6	Understand the different applications of IoT.	CO6	3							2	2					

SEM:V

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
21	JAVA PROGRAMMING (PCC - CS507)	PCC - CS507.1	Students will be able to articulate the principle of object-oriented problem solving & programming	CO1	3	2			2			3						
		PCC - CS507.2	Students will be able to illustrate code reusability, security and abstraction using inheritance, package and	CO2	3	3	2		3			3						
		PCC - CS507.3	Students will be able to develop reliable and user-friendly applications using exception handling and file hand	CO3	2		3	2	3			3						
		PCC - CS507.4	Students will be able to create desktop apps using SWING and event handling and also illustrate	CO4	3	2	3		3			3						
		PCC - CS507.5	Students will be able to use JDBC & collection framework	CO5	2		2		3			3	2					
		PCC - CS507.6	Students will be able to apply network programming concept & develop web applications using servlet and jsp	CO6	3		3		3			3	3					

SEM:V

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
22	BUSINESS ENGLISH (HM-CS508)	HM-CS508.1	Learn to communicate with others in practical, business oriented situations	CO1	2					2	2	2	2	2		2	2	
		HM-CS508.2	Learn to express themselves in English with greater fluency, accuracy and confidence	CO2	2					2	2	2	2	2		2	2	
		HM-CS508.3	Learn to handle themselves in English in a variety of business contexts, from negotiating, to using the telephon	CO3	2					2	2	2	2	2		2	2	
		HM-CS508.4	Enhance the skills of listening, speaking, pronunciation skills, as well as business vocabulary	CO4	2					2	2	2	2	2		2	2	
		HM-CS508.5	Acquire the communicative competencies crucial for appropriate workplace behavior	CO5	2					2	2	2	2	2		2	2	

SEM:VI

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
23	COMPILER CONSTRUCTION (PCC-CS601)	PCC-CS601.1	Recall the compiler phases and compiler construction tools like LEX and YACC.	CO1	3	2	1	1	2						1	2	3	2
		PCC-CS601.2	To design and implement Lexical Analyser for a simple language.	CO2	3	3	2	2	3						1	2	3	3
		PCC-CS601.3	To design and implement Syntax analyser for a simple expression.	CO3	3	3	2	2	3						1	2	3	3
		PCC-CS601.4	To apply Syntax directed translations and Syntax Directed definitions to generate intermediate code.	CO4	3	3	3	3	3						1	2	3	3
		PCC-CS601.5	To identify appropriate code optimizing transformation for the given code.	CO5	2	3	3	3	3						1	2	3	3
		PCC-CS601.6	To explain concept of code generation.	CO6	3	2	2	2	3						1	2	3	3

SEM:VI

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
24	OPERATING SYSTEM-II (PCC-CS602)	PCC-CS602.1	To understand UNIX kernel, its architectural components like file subsystem, process control subsystem,	CO1	3							2	2			3	1	
		PCC-CS602.2	To understand a concrete way (UNIX i-nodes) of organizing a file system on a physical storage medium.	CO2	3							2	2			3	1	
		PCC-CS602.3	To maintain UNIX directories, files, manage processes, manipulate data with proper use of pipes and file redir	CO3	3							2	2			3	1	
		PCC-CS602.4	To implement and handle various UNIX system calls.	CO4	3							2	2				1	
		PCC-CS602.5	To explain the principles of paging, virtual memory (VM) and describe the data structures and components (b	CO5	3							2	2			3	1	
		PCC-CS602.6	To perform shell programming involving decision control, looping and control flow statements on UNIX base	CO6	3							2	2			3	1	

SEM:VI

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
25	DATABASE ENGINEERING (PCC-CS603)	PCC-CS603.1	Understand fundamentals of database management systems	CO1	3	2	1	2	2	1			1			1	3	1
		PCC-CS603.2	Represent logical design of database using E-R Diagram.	CO2	2	3	2	2	2	1			1			1	3	2
		PCC-CS603.3	Analyze & construct good database design.	CO3	2	3	3	3	2	2			1			2	3	3
		PCC-CS603.4	Apply SQL queries to design & manage the database.	CO4	3	2	3	3	3	2			2			2	3	3
		PCC-CS603.5	Understand transactions, concurrency control and apply to database system	CO5	2	2	3	3	2	3			2			2	3	3
		PCC-CS603.6	Understand failures in database and appropriate recovery techniques.	CO6	2	2	2	2	2	3			1			2	3	3

SEM:VI

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
PCC-CS604.1	Explain the basics of Machine Learning, its types, lifecycle, tools, and data visualization.	CO1	3	2		2	2	2	1	1	2	2	1	2	3	2
PCC-CS604.2	Apply simple and multivariate linear regression techniques using gradient descent	CO2	3	3	3	3	2	1			1	2	2	2	3	3
PCC-CS604.3	Implement classification methods like Logistic Regression, Naïve Bayes, and KNN with regularization.	CO3	3	3	3	3	3	1		1	2	2	2	2	3	3
PCC-CS604.4	Construct and compare Decision Trees, Random Forests, and SVM models.	CO4	3	3	3	3	3	1		1	2	2	2	2	3	3
PCC-CS604.5	Apply clustering and association rule mining techniques for unsupervised learning	CO5	3	2	3	2	2	1	1		1	2		2	3	2
PCC-CS604.6	Design basic neural networks and build recommendation systems using various techniques.	CO6	3	3	3	3	3	1			2	2	2	2	3	3

(Sr. No. 26 — MACHINE LEARNING (PCC-CS604))

SEM:VI — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
27	CYBER SECURITY (OEC-CS606)	OEC-CS606.1	Explain the cyber security concepts.	CO1	3											2	2	2
		OEC-CS606.2	Describe the cyber security vulnerabilities and prevention techniques.	CO2	3				2							2	2	2
		OEC-CS606.3	learn the techniques used by hackers and understanding key terminology and the phases of a cyber-attack.	CO3	3							3				2	2	2
		OEC-CS606.4	Learn to apply security technologies, including firewalls, antivirus, and VPNs, to protect against cyber	CO4	3				3							2	2	2
		OEC-CS606.5	Explain the different rules and regulations under I.T. ACT.	CO5	3				3	3		3				2	2	2
		OEC-CS606.6	Explain the concepts of digital forensics & incident management	CO6	3			2				2				2	2	2

SEM:VI — CO-PO Mapping

SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
28	C# PROGRAMMING (PCC-CS607)	PCC-CS607.1	Students will be able to develop correct, well-documented programs using the C# programming language.	CO1	3	2	2	1	2	1	1	1	2	2	1	2	3	3
		PCC-CS607.2	Students will be able to learn to develop object-oriented programs using C# classes and objects	CO2	3	3	3	1	2	1	1	1	2	2	1	2	3	3
		PCC-CS607.3	Students will be able to learn to use Windows Forms and WPF to create GUI-based programs	CO3	2	2	3	2	3	1	1	1	2	2	1	2	3	2
		PCC-CS607.4	Students will be able to build networking and multithreading based programs using C#	CO4	3	3	3	3	3	1	1	1	2	2	1	2	3	3
		PCC-CS607.5	Students will be able to design web applications using ASP.NET using ASP.NET controls in web applications.	CO5	3	2	3	2	3	1	1	1	2	2	1	2	3	3
		PCC-CS607.6	Students will be able to debug and deploy ASP.NET web applications and create database driven ASP.NET w	CO6	2	2	2	2	3	1	1	1	2	2	1	3	2	2

SEM:VI — CO-PO Mapping

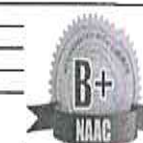| SR.NO	SUBJECT	CO No.	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
29	DOMAIN SPECIFIC MINI PROJECT (PW-CS608)	PW-CS608.1	Identify specific problem statement from a selected domain	CO1	3	2	2	1	1	1			1			1	3	2
		PW-CS608.2	Requires analysis (functional/nonfunctional requirements, design) and creation (documentation)	CO2	3	3	3	2	2	1	1		1			2	3	3
		PW-CS608.3	Write code and carry out testing	CO3	3	3	3	3	2	2	1	1	2			3	3	3
		PW-CS608.4	Write a report covering details and give presentation on a project	CO4	3	2	3	2	1	1			2			2	2	3

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National Assessment and Accreditation Council (NAAC)
Key Indicator - 2.6.1
Under Criterion II Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.
Academic Year: 2024-25

Program: DEPARTMENT OF ELECTRONICS & COMPUTER SCIENCE

SEM:03

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	ENGINEERING MATHEMATICS-III	BSC-ECS-301.1	MAKE USE OF LINEAR DIFFERENTIAL EQUATIONS TO SOLVE THE ELECTRICAL ENGINEERING PROBLEMS.	CO1	3	3								1		
		BSC-ECS-301.2	APPLY KNOWLEDGE OF VECTOR DIFFERENTIATION TO FIND DIRECTIONAL DERIVATIVES, CURL AND DIVERGENCE OF VECTOR FIELDS.	CO2	3	2								1		
		BSC-ECS-301.3	DEFINE FUZZY SETS USING LINGUISTIC WORDS AND REPRESENT THESE SETS BY MEMBERSHIP FUNCTIONS, CONVEXITY, NORMALITY, SUPPORT, ETC.	CO3	3	2								1		1
		BSC-ECS-301.4	DEVELOP FOURIER SERIES EXPANSION OF A FUNCTION OVER THE GIVEN INTERVAL.	CO4	2	3								1		1
		BSC-ECS-301.5	FIND LAPLACE TRANSFORMS OF GIVEN FUNCTIONS AND USE IT TO SOLVE LINEAR DIFFERENTIAL EQUATIONS.	CO5	3	2								1		1
		BSC-ECS-301.6	SOLVE BASIC PROBLEMS IN PROBABILITY THEORY, INCLUDING PROBLEMS INVOLVING THE BINOMIAL, POISSON, AND NORMAL DISTRIBUTIONS.	CO6	3	2								1		

SEM:03

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
2	ELECTRONIC DEVICES	PCC-ECS-302.1	EXPLAIN THE WORKING OF SEMICONDUCTOR DEVICES.	CO1	2	1										2
		PCC-ECS-302.2	INTERPRET THE CHARACTERISTICS OF SEMICONDUCTOR DEVICES	CO2	2	1										3
		PCC-ECS-302.3	ANALYZE ELECTRONICS CIRCUITS USING BJT AND FET (DC & AC ANALYSIS)	CO3	3	2	2	2								2
		PCC-ECS-302.4	COMPARE VARIOUS BIASING CIRCUITS & CONFIGURATIONS OF BJT AND MOSFETS.	CO4	2	1										2
		PCC-ECS-302.5	SELECT BEST CIRCUIT FOR THE GIVEN SPECIFICATIONS/APPLICATION.	CO5	2	1										2
		PCC-ECS-302.6	DESCRIBE THE WORKING OF ADVANCED NANO ELECTRONIC DEVICES	CO6	3	2	2			3				2		2

SEM:03

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
3	DIGITAL ELECTRONICS	PCC-ECS-302.1	PERFORM CODE CONVERSION AND ABLE TO APPLY BOOLEAN ALGEBRA FOR THE IMPLEMENTATION AND MINIMIZATION OF LOGIC FUNCTIONS.	CO1	2	2										
		PCC-ECS-302.2	ANALYZE, DESIGN AND IMPLEMENT COMBINATIONAL LOGIC CIRCUITS.	CO2	2	2	3	1								
		PCC-ECS-302.3	ANALYZE, DESIGN AND IMPLEMENT SEQUENTIAL LOGIC CIRCUITS.	CO3	2	2	3	1								
		PCC-ECS-302.4	DESIGN AND IMPLEMENT VARIOUS COUNTER USING FLIP FLOPS AND MSI CHIPS.	CO4	2	2	3	1	1							
		PCC-ECS-302.5	UNDERSTAND TTL & CMOS LOGIC FAMILIES, PLDS, CPLD AND FPGA	CO5	3	3	2	1								3
		PCC-ECS-302.6	UNDERSTAND BASICS OF VERILOG HARDWARE DESCRIPTION LANGUAGE AND ITS PROGRAMMING WITH COMBINATIONAL AND SEQUENTIAL LOGIC CIRCUIT	CO6	3	3	3	1								3

SEM:03

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
4	DATA STRUCTURE AND ALGORITHM	PCC-ECS-303.1	to describe the various basic concept of data structure	CO1	3	1							3	3		
		PCC-ECS-303.2	to apply and analyze stack and queue for solving computational problems efficiently	CO2	3	1							3	3	1	
		PCC-ECS-303.3	To apply the concept of linked list to perform the operations on liked list	CO3	3	1							3	2	1	
		PCC-ECS-303.4	to apply and analyze various tree structure to efficiently store, search and manipulate hierarchical data	CO4	3	1	1						3	3	1	
		PCC-ECS-303.5	to represent, traverse and analyze graphs to solve complex problems efficiently	CO5	3	1	1						3	3	1	

SEM:03

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
5	DATABASE MANAGEMENT SYSTEM	PCC-ECS-304.1	RECOGNIZE THE NEED OF DATABASE MANAGEMENT SYSTEM	CO1	3								2	2		2
		PCC-ECS-304.2	DESIGN ER AND EER DIAGRAM FOR REAL LIFE APPLICATIONS	CO2	3				2				2	2		2
		PCC-ECS-304.3	CONSTRUCT RELATIONAL MODEL AND WRITE RELATIONAL ALGEBRA QUERIES.	CO3	3	3	3		3				2	2		2
		PCC-ECS-304.4	FORMULATE SQL QUERIES	CO4	3	2	3		3				2	2		2
		PCC-ECS-304.5	APPLY THE CONCEPT OF NORMALIZATION TO RELATIONAL DATABASE DESIGN.	CO5	2	2	3						2	2		2
		PCC-ECS-304.6	DESCRIBE THE CONCEPTS OF TRANSACTION, CONCURRENCY AND RECOVERY	CO6	3								2	2		2

SEM:03

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
6	PROGRAMMING IN C	PCC-ECS-305.1	STUDENT WILL BE ABLE TO UNDERSTAND THE BASIC CONCEPTS OF PROCEDURE-ORIENTED PROGRAMMING LANGUAGE.	CO1	1	2	2		2							1
		PCC-ECS-305.2	STUDENT WILL BE ABLE TO USE THE CONTROL STATEMENTS, LOOPING STATEMENTS AND FUNCTIONS CONCEPTS.	CO2	2	3	1		1							
		PCC-ECS-305.3	STUDENT WILL BE ABLE TO DESIGN PROGRAMS USING USER DEFINED FUNCTIONS AND DATA TYPE.	CO3	3	2	2		1							
		PCC-ECS-305.4	STUDENT WILL BE ABLE TO DESIGN & APPLY THE SKILLS FOR SOLVING THE ENGINEERING PROBLEMS.	CO4	3	3				1	1					
		PCC-ECS-305.5	STUDENT WILL BE ABLE TO UNDERSTAND AND APPLY STRING OPERATIONS	CO5	3	3				1	1					1
		PCC-ECS-305.6	STUDENT WILL BE ABLE TO UNDERSTAND AND DEVELOP FILE HANDLING SOLUTIONS	CO6	3	2		1		1						

SEM 4

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
7	ENVIRONMENT STUDIES	MC-ECS-401.1	UNDERSTANDING OF ISSUES RELATED TO ENVIRONMENT AND THEIR IMPACT ON THE HUMAN LIFE.	CO1	3	2	2		3	2			2	2		3
		MC-ECS-401.2	UNDERSTANDING ON THE SOLUTIONS RELATED TO THE ENVIRONMENTAL PROBLEMS.	CO2	3	3	1		3	3	3		3	2		3
		MC-ECS-401.3	UNDERSTANDING OF DIFFERENT COMPONENT OF ENVIRONMENT AND THEIR FUNCTION AND SUSTAINABLE DEVELOPMENT.	CO3	3	2			3	2				3		3
		MC-ECS-401.4	TO UNDERSTAND SOCIAL ISSUES AND SUGGEST SOLUTION	CO4	3	3	2	2								2

SEM 4

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
8	ELECTRONIC CIRCUITS	PCC-ECS-401.1	To understand the frequency response of MOSFET amplifier.	CO1	3								3	3		3
		PCC-ECS-401.2	To understand the characteristics of differential amplifier.	CO2	3								2	2		3
		PCC-ECS-401.3	To understand with pin diagram operational amplifier.	CO3	3	2			2				3	2		3
		PCC-ECS-401.4	To understand application of operational amplifier	CO4	3								2	2		3
		PCC-ECS-401.5	To understand the basics of oscillator and comparator.	CO5	3	3			2				3	3		2
		PCC-ECS-401.6	Design an application with the use of integrated circuits.	CO6	3								3	2		2

SEM 4

CO-PO Mapping

SR.NO	SUBJECT	co no	Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
9	CONTROLS AND INSTRUMENTATION	PCC-ECS-402.1	DERIVE THE TRANSFER FUNCTIONS FOR THE GIVEN CONTROL SYSTEMS.	CO1	3	3	3	2								3
		PCC-ECS-402.2	ANALYSE THE PERFORMANCE OF CONTROL SYSTEMS BASED ON THE TIME DOMAIN AND FREQUENCY DOMAIN SPECIFICATIONS	CO2	3	2		2								3
		PCC-ECS-402.3	JUDGE THE STABILITY OF THE GIVEN CONTROL SYSTEMS USING APPROPRIATE STABILITY CRITERIA.	CO3	3	3	3									3
		PCC-ECS-402.4	UNDERSTAND AND EXPLAIN THE WORKING PRINCIPLE OF SENSORS AND TRANSDUCERS.	CO4	3	3	3	3	2							3
		PCC-ECS-402.5	EXPLAIN VARIOUS PARAMETERS OF DATA ACQUISITION SYSTEMS.	CO5	3											3

| | PCC-ECS-402.6 | DESCRIBE INSTRUMENT COMMUNICATION STANDARDS. | CO6 | 3 | | | | 2 | | | | | | | 3 |

SEM 4

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
10	COMPUTER NETWORK	PCC-ECS-403.1	Understand concepts of Computer Networks, OSI and TCP/IP Layered Architecture	CO1	3				1				2	2		3
		PCC-ECS-403.2	Understand Data Link Layer, Protocols used in this layer and apply these techniques in order to locate and correct orders	CO2	3	3	2		1				2	2		2
		PCC-ECS-403.3	Understand Network Layer in details and IEEE 802. * Standards	CO3	3								2	2		2
		PCC-ECS-403.4	Understand Network Layer in details and apply these techniques to solve network related issues.	CO4	3	3	3		3				2	2		3
		PCC-ECS-403.5	Demonstrate IP protocol in detail and analyze the protocol structure using network analyzing tools.	CO5	3	3	2		3				2	2		3
		PCC-ECS-403.6	Apply the principals of socket programming in the networks.	CO6	3	2	3		3				2	2		3

SEM 4

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
11	MICROPROCESSORS & MICROCONTROLLERS	PCC-ECS-404.1	To study the concepts and basic architecture of a Microprocessor and Microcontroller.	CO1	2	1	2									3
		PCC-ECS-404.2	To write Assembly language programs for Microprocessors and Micro controllers for various applications.	CO2	1	3	1	2	1							3
		PCC-ECS-404.3	To know the importance of different peripheral devices and their interfacing to 8086 and 8051.	CO3	3	2	3	2	1							3
		PCC-ECS-404.4	To build Microprocessor and Microcontroller based systems.	CO4	2	1	3	1	1							3

SEM 4

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
12	DISCRETE STRUCTURE & AUTOMATA THEORY	PCC-ECS-405.1	UNDERSTAND THE NOTION OF MATHEMATICAL THINKING, MATHEMATICAL PROOFS AND TO APPLY THEM IN PROBLEM SOLVING.	CO1	3	3		2					1	1		
		PCC-ECS-405.2	Perform operations with Relations & Functions	CO2	3	3		2					1	1		
		PCC-ECS-405.3	PERFORM OPERATIONS WITH SETS, RELATIONS, FUNCTIONS, GRAPHS AND THEIR APPLICATIONS.	CO3	3	3		2					1	1		
		PCC-ECS-405.4	DESIGN DETERMINISTIC FINITE AUTOMATA (DFA) AND NON-DETERMINISTIC FINITE AUTOMATA (NFA) AND PUSHDOWN AUTOMATA WITH UNDERSTANDING OF POWER AND LIM	CO4	3	3		2	1				2	2		
		PCC-ECS-405.5	DESIGN CONTEXT FREE GRAMMAR AND PERFORM THE OPERATIONS LIKE SIMPLIFICATION AND NORMAL FORMS.	CO5	3	3		2	1				2	2		
		PCC-ECS-405.6	APPLY DISCRETE STRUCTURES AND AUTOMATA THEORY CONCEPTS INTO SOLVING REAL WORLD COMPUTING PROBLEMS IN THE DOMAIN OF FORMAL SPECIFICATION, VERIFIC	CO6	3	3		2	1				2	2		

SEM 4

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
13	PROGRAMMING IN C++	PCC-ECS-406.1	STUDENT WILL BE ABLE TO UNDERSTAND THE BASIC CONCEPTS OF PROCEDURE-ORIENTED PROGRAMMING LANGUAGE.	CO1	3								2	2		2
		PCC-ECS-406.2	STUDENT WILL BE ABLE TO USE THE CLASS, OBJECTS, FUNCTION AND OPERATOR OVERLOADING CONCEPTS	CO2	3								2	2		2
		PCC-ECS-406.3	STUDENT WILL BE ABLE TO UNDERSTAND AND IMPLEMENT THE CONCEPT OF INHERITANCE, TEMPLATE AND EXCEPTION HANDLING APPLICATIONS	CO3	3	3	1		2				2	2		2
		PCC-ECS-406.4	STUDENT WILL BE ABLE TO DESIGN & APPLY THE SKILLS FOR SOLVING THE ENGINEERING PROBLEMS.	CO4	3	2	2		3				2	2		3
		PCC-ECS-406.5	APPLY MULTIPLE INHERITANCE TO SOLVE PROBLEMS INVOLVING CLASS RELATIONSHIPS.	CO5	2	2	3		3				2	2		2
		PCC-ECS-406.6	EXPLAIN THE ROLE AND USAGE OF FUNCTION TEMPLATES AND CLASS TEMPLATES IN C++.	CO6	2	2	3		3				2	2		2

SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
14	Signal & System	PCC-ECS-501.1	Demonstrate use of signals and their representation.	CO1	2	2			1					2		
		PCC-ECS-501.2	Represent CT & DT system	CO2	3	3	2	2	2					2		
		PCC-ECS-501.3	Use Fourier transform for analysis of CT & DT signals	CO3	3	2	3	3	2					3		
		PCC-ECS-501.4	Compute DFT and IDFT	CO4	3	2	3	3	2					3		
		PCC-ECS-501.5	Analyze signals using Z-transform	CO5	3	2	3	3	2					3		
		PCC-ECS-501.6	Realize the systems	CO6	3	3	3	3	2					3		

SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15	Power Electronics	PCC-ECS-502.1	Understand the characteristics of various power electronics devices	CO1	3	2	1									3
		PCC-ECS-502.2	Understand the different firing circuits of thyristor.	CO2	3	2		1								3
		PCC-ECS-502.3	Analyze controlled rectifier circuits.	CO3	3	3	2	1								3
		PCC-ECS-502.4	Study of invertors using MOSFET & IGBT.	CO4	3	2	2		1							3
		PCC-ECS-502.5	Analyze the different types of choppers.	CO5	3	3	2	1								3
		PCC-ECS-502.6	Understand the Industrial applications of Power circuits.	CO6	3	2	1			1		1				2

SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
16	Computer Organization & Architecture	PCC-ECS-503.1	Define the performance metrics of a computer	CO1	3	2		1	2							2
		PCC-ECS-503.2	Explain the design considerations of Processor, Memory and I/O in Computer systems	CO2	3	3	2	2	3							2
		PCC-ECS-503.3	Interpret the objectives and functions of an Operating System	CO3	3	3	2	3	3							3
		PCC-ECS-503.4	Analyze the concept of process management and evaluate performance of process scheduling algorithms	CO4	3	3	3	3	3							3
		PCC-ECS-503.5	Evaluate the advantages and limitations of Parallelism in systems	CO5	3	3	2	3	3							3
		PCC-ECS-503.6	Discuss the various architectural enhancements in modern processors	CO6	3	3	2	3	3							3

SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
17	Computer Network II	PCC-ECS-504.1	Program the client server model using sockets	CO1	3		3		3				2	2		
		PCC-ECS-504.2	Understand and apply next generation protocol and addressing model	CO2	3	3			2							2
		PCC-ECS-504.3	Elaborate the fundamentals of Domain Name Systems	CO3	3	2								2		
		PCC-ECS-504.4	Apply the concepts of Remote login and FTP in network applications	CO4	3		3		3				2	2		2
		PCC-ECS-504.5	Learn fundamentals of web, HTTP and e-mail communication protocols.	CO5	3	2			2					2		2
		PCC-ECS-504.6	Understand multimedia streaming and relevant protocols.	CO6	3	2			2							2
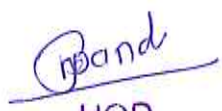
SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18	Sensors and applications (Elective -I)	PEC-ECS-501.1	Classify sensors/transducers and describe important performance measures, terminology of sensors/instrumentation systems.	CO1	3				3				3	3		3
		PEC-ECS-501.2	Compare various temperature sensors, design signal conditioning circuits for temperature sensors and describe working principles of chemical sensors.	CO2	3				3				3	3		3
		PEC-ECS-501.3	Compare various flow and level sensing techniques and select appropriate technique for a specific application.	CO3	3				3				3	3		3
		PEC-ECS-501.4	Describe working principles of motion, light and radiation detectors.	CO4	3				3				3	3		3
		PEC-ECS-501.5	Describe construction and working principle of MEMS and SMART sensors.	CO5	3				3				3	3		3
		PEC-ECS-501.6	Select appropriate Switches and final control elements for a specific application	CO6	3				3				3	3		3

SEM 5

				CO-PO Mapping											
SR.NO	SUBJECT	co no	Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		PCC-ECS-505.1	Students will be able to articulate the principle of object-oriented problem solving & programming.	CO1	3	2	2	1	2					2		2

19	Java Programming	PCC-ECS-505.2	to illustrate code reusability, security and abstraction using inheritance, package and interface.	CO2	2				2					2		2
		PCC-ECS-505.3	to develop reliable and user-friendly applications using exception handling and file handling.	CO3	2	3	3	2	2					2		2
		PCC-ECS-505.4	to create desktop apps using SWING and event handling and also illustrate multithreading concepts.	CO4	2	2	3	2	3				2	2		2
		PCC-ECS-505.5	to use JDBC & collection framework.	CO5	2	2	3	2	3				2	2		2
		PCC-ECS-505.6	to apply network programming concept & develop web applications using servlet and jsp.	CO6	2	2	3	2	3				2	2		2

SEM 6

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															CO-PO Mapping	
20	Digital Signal Processing	PCC-ECS-601.1	Make use of FFT algorithm for filtering of long duration sequences	CO1	3	3	3		3				2			
		PCC-ECS-601.2	Design digital FIR filters	CO2	3	3	3		3				2			
		PCC-ECS-601.3	Design digital IIR filters	CO3	3	3	3		3				2			
		PCC-ECS-601.4	Implement FIR and IIR filters using DSP Processor	CO4	3	3	3		3				2			
		PCC-ECS-601.5	Apply the basic concept of Multirate digital signal processing	CO5	3	3	3		3				2			
		PCC-ECS-601.6	Apply the basic concept of wavelet transform	CO6	3	3	3		3				2			

SEM 6

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															CO-PO Mapping	
21	PLC and Automation	PCC-ECS-602.1	Apply concepts of PLC, its uses for industrial applications.	CO1	3								3	3		3
		PCC-ECS-602.2	Demonstrate Relay logic instructions & PLC ladder programs for industrial applications.	CO2	3				3				2	2		3
		PCC-ECS-602.3	Demonstrate timer, counter arithmetic, comparison functions & PLC ladder programs for industrial applications.	CO3	3				3				3	2		3
		PCC-ECS-602.4	Make use of knowledge of Installation, troubleshooting & maintenance of PLC to provide solution for industrial automation problems.	CO4	3				3				2	2		3
		PCC-ECS-602.5	Describe fundamentals of process control, SCADA & HMI	CO5	3								3	3		2
		PCC-ECS-602.6	Select appropriate interfacing technique & communication protocol to establish communication with field devices, HMI & SCADA.	CO6	3								3	3		2

SEM 6

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															CO-PO Mapping	
22	SOFTWARE ENGINEERING	PCC-ECS-603.1	Comprehend systematic methodologies of SDLC (Software Development Life Cycle)	CO1	3		2		3				3	3	3	2
		PCC-ECS-603.2	Discriminate competing and feasible system requirements indicating correct real world problem scope and prepare stepwise system conceptual model using stakeholder analysis and requirement validation.	CO2	2		2		2				3	3		3
		PCC-ECS-603.3	Prepare SRS document for a project.	CO3	2	2	3		2				3	3	3	3
		PCC-ECS-603.4	Apply software design and development techniques.	CO4	2	3	3		3				3	3	3	3
		PCC-ECS-603.5	Develop a quality software project through effective team-building, planning, scheduling and risk.	CO5	3		3		3				3	3		
		PCC-ECS-603.6	Understand testing methods at each phase of SDLC.	CO6	3		3		3							2

SEM 6

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															CO-PO Mapping	
23	PYTHON PROGRAMMING	PCC-ECS-604.1	To Learn Basic Syntax of Python Programming.	CO1	3	1			2				2	2		2
		PCC-ECS-604.2	To understand and implement concepts of object-oriented methodology using Python.	CO2	2	3			2							2
		PCC-ECS-604.3	To learn collections in Python.	CO3	2	2			2				2	2		2
		PCC-ECS-604.4	To develop problem solving skills and their implementation through Python.	CO4	2	2			2							
		PCC-ECS-604.5	Understand and apply the concept of mutable and immutable data structures in Python, including Lists, Tuples, Sets, and Dictionaries.	CO5	2	2			2				2			2
		PCC-ECS-604.6	Understand the concept of Python modules and how they help in organizing and reusing code.	CO6	2	2			2							2

SEM 6

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															CO-PO Mapping	
24	Internet of Things (Elective-II)	PEC-ECS-601.1	understand basic concepts of IoT	CO1	3								2	1		1
		PEC-ECS-601.2	learn and implement RFID technology in various applications.	CO2	3								2	1		1
		PEC-ECS-601.3	write programs for basic applications	CO3	3	2	1						2	1		2
		PEC-ECS-601.4	understand and implement different communication technologies in IoT systems.	CO4	3								2	1		2

SEM 6

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															CO-PO Mapping	
25	Mini Project I	EL-ECS-601.1	Practice acquired knowledge within the chosen area of technology for project development.	CO1	3								2	1		1
		EL-ECS-601.2	Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.	CO2	3								2	1		1
		EL-ECS-601.3	Reproduce, improve and refine technical aspects for engineering projects.	CO3	3								2	1		2
		EL-ECS-601.4	Work as an individual or in a team in development of technical projects.	CO4	3	2	1						2	1		2
		EL-ECS-601.5	Communicate and report effectively project related activities and finding	CO5	3								2	1		2

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