NETAJI SUBHAS INSTITUTE OF TECHNOLOGY
AMHARA, BIHTA, PATNA

DEPARTMENT OF
ELECTRONICS & COMMUNICATION ENGINEERING

CO & CO-PO Mapping

Semester I

SUBJECT:-	Chemistry	
CORSE CODE:-	**100103**	**NO. of Lecture**
CO1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces .	12
CO2	Rationlise bulk properties and processes using thermodynamic considerations.	8
CO3	Analyze hardness of water for industrial and domestic applications .	4
CO4	Distinguish the ranges of the electromagnetic spectrum used exciting different molecular energy levels in various spectroscopic techniques .	8
CO5	learn periodic properties such as ionisation potential, electronegativity, oxidation state, electron affinities.	6
CO6	learn periodic properties such as ionisation potential, electronegativity, oxidation state, electron affinities.	4

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	1	2	1	0	0	3	0	2	0	2	0	0	0
	C02	1	1	1	2	2	0	0	0	0	1	1	2	0	0	0
	C03	1	1	2	2	3	3	2	0	1	2	3	2	0	0	0
	C04	2	2	2	3	2	2	2	0	1	2	2	3	0	0	0
	C05	0	0	0	0	1	0	0	3	0	1	0	2	0	0	0
	C06	2	2	2	3	3	3	2	0	1	2	3	3	0	0	0

Chemistry Lab	**Subject Code-100103P**	**No. of Lecture**
CO1	Determine the choride content of water	2
CO2	Learnand apply basic techniques used in chemistry laboratoryfor volumetric analysis redox titration with different indicators, EDTA titration .	3

CO3	Expose to different methodsof chemicals analysis anduse of some commonly employed.	3
CO4	Synthesis a small drugs molecule and analysea salt samples .	2
CO5	Estimate rate constant of reaction from concentration of reatant such as surface tension aand viscosity .	2

		Mapping														
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	C02	1	1	0	1	0	3	0	0	1	0	2	1	0	0	0
	C03	1	2	1	2	2	2	0	0	0	1	2	0	0	0	0
	C04	1	1	2	3	2	3	2	0	2	2	3	2	0	0	0
	C05	2	1	2	2	2	0	1	0	1	2	0	1	0	0	0

SUBJECT:-	Mathematics - I (Calculus and differential Equation)	
CORSE CODE:-	103102	No. of Lecture
CO1	Discuss the applications of mean value theorems to the mathematical problem, evaluation of improper integrals using Beta and Gamma functions.	8
CO2	Illustrate convergence and divergence of sequence and series; Fourier series.	7
CO3	Study the extrema of functions of two variables with / without constraints.	7
CO4	Examine the double and triple integrals and its applications.	8
CO5	Understand ODE, PDE, initial value and boundary value problem	10

		Mapping														
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	3	0	2	1	0	0	0	0	1	2	0	0	0	0
	C02	3	3	1	3	2	0	0	0	0	1	0	0	0	0	0
	C03	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	C04	3	3	1	2	2	0	0	0	0	0	2	0	0	0	0
	C05	3	3	1	2	2	0	0	0	0	0	2	0	0	0	0

SUBJECT:-	PROGRAMMING FOR PROBLEM SOLVING	
CORSE CODE:-	100104	No. of Lecture
CO1	TO FORMULATE SIMPLE ALGORITHMS FOR ARITHMETIC AND LOGICAL PROBLEMS.	8
CO2	TO TRANSLATE THE ALGORITHMS TO PROGRAMS (IN C LANGUAGE).	7

CO3	TO TEST AND EXECUTE THE PROGRAMS AND CORRECT SYNTAX AND LOGICAL ERRORS.	6
CO4	TO IMPLEMENT CONDITIONAL BRANCHING, ITERATION AND RECURSION.	7
CO5	TO DECOMPOSE A PROBLEM INTO FUNCTIONS AND SYNTHESIZE A COMPLETE PROGRAM USING DIVIDE AND CONQUER APPROACH	12

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	0	0	0	0	1	1	0	1	0	0	0
	C02	0	1	1	1	0	0	0	0	1	1	0	1	0	0	0
	C03	0	1	1	1	0	0	1	0	1	1	0	1	0	0	0
	C04	1	1	1	1	0	0	1	0	1	1	0	1	0	0	0
	C05	1	1	1	1	0	0	1	0	1	1	0	1	0	0	0

SUBJECT:-	**PROGRAMMING FOR PROBLEM SOLVING LAB**	
CORSE CODE:-	**100104P**	**No. of Lecture**
CO 1	Students will be able to develop C programs for simple applications making use of basic constructs	4
CO 2	Students will be able to develop C programs for simple applications using Arrays and Strings	4
CO 3	Students will be able to develop C programs involving Functions, Recursion, and Pointers.	4
CO 4	Students will be able to develop C programs involving Structures	2
CO 5	Students will be able to design applications using sequential and random access file processing.	4

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	0	1	1	0	2	0	0	0	0	2	0	0	0	0
	C02	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0
	C03	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0
	C04	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0
	C05	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0

Course Name:-	**Workshop Manufacturing Practices**	
Course Code :	**100105**	**No. of Lecture**

CO1	Undersatnd different types of manufacturing techniques, their advantagas with their economic,socail and susatainable aspects.	8
CO2	Apply principalof fundamental and advanced mathematics, basic science and engineering, statistical techniques to calculate process parameters and design parameters to craete a product satisfying national and international standards used in any manufacturing process.	8
CO3	Compare, analyze,document and present various traditional workshop manufacturing processes as well as modern manufacturing tools.	9
CO4	Analyze alternative design as well as economic aspects of a given manufacturing process	9
CO5	Identify emerging technologies and make students aware of them for their continuous professional growth by bridging knowledge about emerging industry oriented technology	9

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	0	1	2	2	2	0	1	1	2	3	1	0	0
	C02	3	3	2	2	3	3	1	3	0	1	0	0	2	0	0
	C03	2	2	2	2	2	0	0	0	0	3	1	2	0	1	0
	C04	0	1	2	2	1	0	0	0	0	1	3	0	0	2	0
	C05	0	2	1	1	1	0	0	0	0	1	1	2	0	1	0

Course Name	WORKSHOP MANUFACTURING PRACTICES(Practical)	
CORSE CODE:-	100105(P)	No. of Lecture
CO1	Understand the appropriate conventional and modern tools, materials, instruments required for specific operations with their limitations in workshop.	4
CO2	Identify , develop and improve practical skills in various machining operations and safety consciousness and show team work.	4
CO3	Design ,anlayze ,create and inspect an object in workshop using various machine and hand tool available in different shops such as fitting , carpentary weleding and machine shop.	5
CO4	Apply different conventional and advanced manufacturing techniques and measuring instruments for making a job with help of laws of basic science under economic constraints.	4

CO5	Discriminate and develop various sustainable,ethical and cost-effective solutions for real engineering problems using machine and equipments in workshop .	2

Mapping																
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	1	1	1	2	0	0	0	0	1	0	1	1	0	0
	C02	1	2	1	2	2	2	0	2	3	1	1	2	2	0	0
	C03	2	1	1	2	2	0	1	0	1	3	1	0	0	1	0
	C04	3	1	2	2	1	0	0	0	0	1	2	2	0	2	0
	C05	2	2	1	1	1	0	3	3	0	0	2	1	0	1	0

SUBJECT:-	ENGLISH - (COMMUNICATIVE)	
CORSE CODE:-	100106	No. of Lecture
CO1	Ability to communicate effectively and write and present properly.	8
CO2	Ability to work individually and in intra disciplinary and multidisciplinary teams	7
CO3	Recognition of the need for lifelong learning and to access information as well as development in science and technology	6
CO4	Knowledge of project management, risk management, innovation and change management, entrepreneurship and sustainable development	7
CO5	Ability to identify, define, formulate and solve complex engineering problems as well as electing and applying appropriate analysis and modelling methods for wide purpose.	12

Mapping																
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	1	2	3	0	3	1	2	1	2	3	2
	C02	0	2	1	2	2	2	1	2	3	2	2	1	3	1	2
	C03	3	1	1	1	2	2	1	0	3	2	2	0	2	3	2
	C04	1	2	1	1	2	2	1	2	3	3	2	1	3	2	2
	C05	2	1	1	2	2	3	1	2	3	3	3	2	1	2	3

SUBJECT:-	LANGUAGE LAB	
CORSE CODE:-	100106P	No. of Lecture
CO1	Identify common errors in spoken and written communication	4

CO		No. of Lecture
CO2	Get familiarized with English vocabulary and language proficiency	4
CO3	Improve nature and style of sensible writing, acquire employment and workplace communication skills.	4
CO4	Improve their Technical Communication Skills through Technical Reading and Writing practices.	2
CO5	Perform well in campus recruitment, engineering and all other general competitive examinations	4

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	2	1	2	0	1	0	0	2	2	2	0	0	0
	C02	0	2	2	2	2	0	0	0	0	1	1	1	0	0	0
	C03	3	1	1	0	2	0	0	0	0	2	1	0	0	0	0
	C04	1	2	2	2	2	3	2	0	0	1	1	1	0	0	0
	C05	2	1	1	1	2	2	0	0	0	1	1	2	0	0	0

Semester II

SUBJECT:-	**Physics (Wave & Optics and Introduction to Quantum Mechanics)**	
CORSE CODE:-	**103201**	**No. of Lecture**
CO1	Study various types of oscillators and to understand the behaviour of waves through various examples.	7
CO2	To understand and analyse the intensity variation of light due to polarization, interference and diffraction.	7
CO3	Understand the different optical phenomenon and apply to real life incidents.	6
CO4	To undersatnd the concept, properties of different types of lasers and their applications	6
CO5	Study of material properties and their applications and also understand solids on the basis of band theory.	6
CO6	Explain fundamentals of quantum mechanics and to understand the difference in particle and wave nature with explanation of Schrodinger wave equation	8

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	1	2	1	2	0	1	0	0	1	0	0	0	0	0
	C02	2	2	2	2	2	0	1	0	0	1	0	0	0	0	0
	C03	2	2	2	1	2	0	1	0	0	1	0	0	0	0	0

C04		3	2	2	2	2	0	1	0	0	1	0	0	0	0	0
C05		3	3	3	1	2	0	1	0	0	1	0	0	0	0	0
C06		3	3	2	1	2	0	1	0	0	1	0	0	0	0	0

SUBJECT:-	Physics (Wave & Optics and Introduction to Quantum Mechanics)	
CORSE CODE:-	103201P	No. of Lecture
CO1	Estimate the optical properties of light such as interference, diffraction and polarization by different experiments.	7
CO2	Student will understand the characteristics of diode.	5
CO3	To determine the energy band gap of a given semiconductor material.	2
CO4	Students will understand how to find out threshold voltage and calculate Planck's constant using various LEDs.	2
CO5	Determine the frequency of alternating current using sonometer and they will be able to relate the tension of the wire, linear density of the wire, and the resonating length of the wire.	2

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	1	2	0	2	2	0	1	1	1	0	0	0	0
	C02	2	2	1	2	0	2	2	0	1	1	1	0	0	0	0
	C03	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0
	C04	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0
	C05	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0

SUBJECT:-	Mathematics - II (Linear Algebra, Transform Calculus and Numerical Methods)	
CORSE CODE:-	103202	No. of Lecture
CO1	Learn about inverse and rank of a matrix and solution of system of equations.	8
CO2	Analyse symmetric, skew symmetric Matrices and its properties (orthogonal, diagonal Cayley Hamilton theorem).	7
CO3	Compute bisection method, Newton Raphson method, Regula Falsi, Newton's forward, backward difference,; Gauss's Forward and backward formulae,; Trapezoidal rule, Simpson's 1/3rd and 3/8th rule.	7
CO4	Solve ODE of first and second order by Taylor's series, Euler, Runge ku	8
CO5	Discuss about Laplace and Fourier transform.	10

		Mapping		

CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome C01	2	3	1	2	1	0	1	0	0	1	2	0	0	0	0
C02	3	3	1	3	2	0	0	0	0	1	0	0	0	0	0
C03	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0
C04	3	3	2	2	2	3	2	0	0	0	2	2	0	0	0
C05	3	3	1	2	2	0	1	0	0	0	2	0	0	0	0

SUBJECT:-	Basic Electrical Engineering	
CORSE CODE:-	100201	No. of Lecture
CO1	Students are able to examine and execute the basic concepts of AC and DC electric circuit and its behaviour.	10
CO2	Students are capable of analysing the fundamental ideas behind magnetic circuits, including their definition, magnetic hysteresis phenomena, B-H curve, and hysteresis loop.	7
CO3	Students are capable of applying the essential ideas and definitions of AC circuits, including single-phase, three-phase, RC and RLC circuits, and star and delta connections.	8
CO4	To identify the different kinds of single-phase transformers and to compute efficiency, losses, and regulations	8
CO5	To analyze the performance characteristics of DC and AC electrical machines.	9

Mapping															
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome C01	3	3	1	2	0	2	2	0	0	1	0	1	0	0	0
C02	2	2	1	3	0	2	2	0	0	1	1	1	0	0	0
C03	3	3	1	0	0	2	3	0	0	1	1	1	0	0	0
C04	3	3	2	3	0	2	3	0	0	1	2	3	0	0	0
C05	3	3	1	2	0	2	3	0	0	1	2	3	0	0	0

SUBJECT:-	Basic Electrical Engineering LAB	
CORSE CODE:-	100201P	No. of Lecture
CO1	To analyze a given network by applying various electrical laws and network theorems.	4
CO2	To know the response of electrical circuits for different excitations.	4
CO3	To calculate, Measure and know the relation between basic electrical parametres.	4

CO4	To analyze the performance characteristics of DC and AC electrical machines.	8

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	3	1	2	0	2	0	0	0	1	0	1	0	0	0
	C02	2	2	1	3	0	2	1	0	0	1	1	1	0	0	0
	C03	3	3	1	0	0	2	1	0	0	1	1	1	0	0	0
	C04	3	3	2	3	0	2	1	0	0	1	2	3	0	0	0

Course Name:-	ENGINEERING GRAPHICS & DESIGN	
Course Code :	100202	No. of Lecture
CO1	Apply the concept of drawing in practical applications	8
CO2	Draw the projection of points, lines and planes	6
CO3	Classify solids and projection of solids at different positions	9
CO4	Show sectioned view of solids and development of surfaces	8
CO5	Discuss about conics and orthographic views , isometric view of engineering components.	10
CO6	Understand the basic AUTOCAD commands and other emerging designing tools.	6

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	0	2	1	0	1	1	0	2	1	0	0
	C02	1	1	1	1	2	0	0	0	1	1	0	0	2	0	0
	C03	0	1	1	1	1	0	0	0	0	1	0	0	0	2	0
	C04	0	1	1	1	0	0	0	0	1	1	0	0	0	2	0
	C05	0	0	1	1	1	0	1	0	1	1	2	1	0	1	0
	C06	0	0	0	1	3	0	0	2	0	1	0	1	0	0	0

Course Name	ENGINEERING GRAPHICS & DESIGN(Practical)	
CORSE CODE:-	100202(P)	No. of Lecture
CO1	Get acquainted with the knowledge of various lines, geometrical constructions and construction of various kinds of scales, and Ellipse.	4
CO2	Improve their imagination skills by gaining knowledge about points, lines and planes.	4
CO3	Become proficient in drawing the projections of various solids.	5
CO4	Gain knowledge about orthographic and isometric projections.	4

CO5	Development of surface of different kind of solid.	2

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	0	2	1	0	1	1	0	2	1	0	0
	C02	1	1	1	1	2	0	0	0	1	1	0	0	2	0	0
	C03	0	1	1	1	1	0	0	0	0	1	0	0	0	1	0
	C04	0	1	1	1	0	0	0	0	1	1	0	0	0	2	0
	C05	0	0	1	1	1	0	1	0	1	1	2	1	0	1	0

Semester III

SUBJECT:-	OOPS	
CORSE CODE:-	**100313**	**No. of Lecture**
CO1	Students will be able to Interpret Java programs using Object Oriented P	8
CO2	Students will be able to Explain Java programs with the concepts inherit	7
CO3	Students will be able to Relate Java applications with threads and generi	6
CO4	Students will be able to Develop Java applications with threads and gene	7
CO5	Students will be able to Develop interactive Java programs using swings,	12

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	1	0	1	0	0	1	1	2	0	0	0
	C02	2	1	0	1	2	2	2	0	0	1	1	2	0	0	0
	C03	2	1	0	1	2	2	2	0	0	1	1	2	0	0	0
	C04	2	1	1	1	2	2	2	0	0	1	1	2	0	0	0
	C05	2	1	1	1	1	0	1	0	0	1	1	2	0	0	0

SUBJECT:-	OOPS LAB	
CORSE CODE:-	**100313P**	**No. of Lecture**
CO1	Students will be able to Develop and implement Java programs for simpl	4
CO2	Students will be able to Design applications using file processing	4
CO3	Students will be able to Build software development skills using java pro	4
CO4	Students will be able to Apply the concepts of classes,packages,interface	2
CO5	Students will be able to Develop applications using generic programming	4

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03

Course Outcome		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	2	0	1	1	0	2	0	0	0	0	2	0	0	0	0
	C02	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0
	C03	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0
	C04	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0
	C05	0	0	1	1	0	2	1	0	0	1	2	0	0	0	0

SUBJECT:-	BASIC ELECTRONICS	
CORSE CODE:-	104301	No. of Lecture
CO1	To study basics of semiconductor & devices and their application in different areas.	8
CO2	To study different biasing techniques to operate transistor, FET, MOSFET and operational amplifier in different modes.	10
CO3	Analyze output in different operating modes of different semiconductor devices.	8
CO4	Compare design issues, advantages, disadvantages and limitations of basic electronics.	8
CO5	To study half wave rectifier and full wave rectifier	8

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	2	1	2	2	0	0	0	0	1	2	3	0	0	0
	C02	2	2	1	1	2	0	0	0	0	1	2	3	0	0	0
	C03	3	2	1	1	2	0	0	0	0	1	2	3	0	0	0
	C04	2	2	1	1	2	0	0	0	0	1	2	2	0	0	0
	C05	3	2	1	1	2	0	0	0	0	1	2	3	0	0	0

SUBJECT:-	Basic Electronics Lab	
CORSE CODE:-	104301P	No. of Lecture
CO1	To Study the V-I characteristics of Forward Biased PN junction diode.	4
CO2	To Study the Reverse characteristics of Zener diode.	2
CO3	To draw Input-Output waveform of Half wave Rectifier	2
CO4	To draw Input-Output waveform of Full wave Rectifier	4
CO5	To Study Clipping and Clapping Circuit.	4
CO6	To Identify the terminal of a Transistor Emitter, Base and Collector and	4

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	3	2	0	0	0	0	3	2	1	0	0	0
	C02	3	3	1	3	3	0	0	0	0	2	0	2	0	0	0
	C03	2	2	1	2	2	0	0	0	0	2	2	2	0	0	0

C04		3	2	1	3	3	0	0	0	0	2	3	2	0	0	0
C05		3	2	1	3	3	0	0	0	0	2	3	2	0	0	0
C06		3	2	1	2	2	0	0	0	0	2	2	2	0	0	0

SUBJECT:-	**Electrical & Electronic Materials**	
CORSE CODE:-	**104302**	**No. of Lecture**
CO1	Discuss the applications of mean value theorems to the mathematical problem, evaluation of improper integrals using Beta and Gamma functions.	7
CO2	Basic concept of convergence and Divergence, and Discuss the applications of convergence of sequence and series .,half range sine and cosine series	8
CO3	Examine the extrema of functions of two variables with / without constraints.	6
CO4	Discuss the double and triple integrals and its applications	8
CO5	Classifies the differential equation, ODE and PDE and Discuss the different types of problems. ODE and PDE and understand that physical system ,practical importance and boundary value problem.	10

		Mapping															
	CO	**PO**													**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	2	3	3	3	3	2	0	0	1	0	2	0	0	0
	C02	3	3	2	2	3	2	0	0	0	1	0	2	0	0	0
	C03	3	2	3	3	3	2	2	0	0	1	0	2	0	0	0
	C04	3	3	2	2	3	2	1	0	0	1	0	2	0	0	0
	C05	3	2	3	3	3	0	2	0	0	1	0	2	0	0	0

SUBJECT:-	**Electrical & Electronics Material**	
CORSE CODE:-	**104302-P**	**No. of Lecture**
CO1	To determine the energy band gap & resistivity with temparature of a semiconductor using four probe method.	4
CO2	To measure the Hall voltage, charge carrier concentration of Semiconductor wafer.	4
CO3	To calculate the Hall Coefficient & mobility of charge carriers, Hall voltage as a function of probe at constant magnetic field of a given semiconductor wafer,	3
CO4	Determination of structures of simple crystals by X-ray diffraction	3
CO5	To determine the hysteresis Loss with the help of B-H curve.	6

Mapping															
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	3	3	3	3	3	0	2	0	0	1	2	2	0	0	0
C02	3	3	3	3	3	0	2	0	0	1	2	2	0	0	0
C03	3	3	3	3	3	0	2	0	0	1	2	2	0	0	0
C04	3	3	3	3	3	0	2	0	0	1	2	2	0	0	0
C05	2	3	3	3	3	0	2	0	0	1	2	2	0	0	0

SUBJECT:-	MATHEMATICS -III (Calculus and Linear Algebra)	
CORSE CODE:-	104303	No. of Lecture
CO1	Discuss the Chebysev Polynomials, Lagranges polynomial and Wavelets.	8
CO2	Illustrate sets, relations and functions: Basic operations on sets, Ber and Bei functions; recurrence relations, orthogonality properties.	6
CO3	Study Graphs and their basic properties – degree, path, cycle, subgraph, isomorphism, Eulerian solutions of partial differential equations.	6
CO4	Learn measures of Central tendency: Moments, skewness and Kurtosis ; Probability distributions - Binomial, Poisson and Normal ; evaluation of statistical parameters.	10
CO5	Demonstrate curve fitting using least squares of straight lines, second degree parabolas and test of significance.	10

Mapping															
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	2	3	1	2	1	0	1	0	0	1	2	0	0	0	0
C02	3	3	1	3	2	0	0	0	0	1	0	0	0	0	0
C03	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0
C04	3	3	2	2	2	3	2	0	0	0	2	0	0	0	0
C05	3	3	1	2	2	0	1	0	0	0	2	0	0	0	0

SUBJECT:-	NETWORK THEORY	
CORSE CODE:-	104304	No. of Lecture

CO1	To understand about the signals & their classifications, different types of systems, to know the LTI systems and their properties, To apply the periodic waveform and signal synthesis and Laplace Transform.	8
CO2	To apply the differential equations and transient response of R,L, C series & parallel circuits for impulse, step, ramp, sinusoidal & exponential signals by classical and Laplace transform.	7
CO3	To understand the Graph theory --Concept of tree, Tie-set matrix, Cut-set matrix and application to solve electric networks, Analyze & application of two port parameters and their interconversion, To develop the skill for Interconnection of two 2-port networks, To analyse the Open circuit and Short circuit impedances and ABCD constant.	6
CO4	To understand the relation between image impedances and Short circuit and Open circuit impedances, Application of network functions, concept of transfer impedances, To identify the Hurwitz polynomial, Positive real function, To analyze the LC,RC, RL Network in Foster's I & II, Cauer's I&II.	7
CO5	To understand the concept of passive filter and their classification, Application of frequency response, Characteristics of impedances of low, high, band filters & band reject prototype section.	12

		Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	3	1	2	3	0	1	0	0	2	0	0	0	0	0
	C02	3	3	1	3	3	0	0	0	0	2	0	0	0	0	0
	C03	3	3	1	2	2	0	0	0	0	2	0	0	0	0	0
	C04	3	3	2	2	3	0	1	2	0	2	0	0	0	0	0
	C05	3	2	1	3	3	0	0	0	0	2	0	0	0	0	0

SUBJECT:-	Signal System	
CORSE CODE:-	**104305**	**No. of Lecture**
CO1	Define signal, systems and its importance in life.	8
CO2	Represent the signal in the time domain as well as in Frequency domain and find the response of the system.	8
CO3	Define Z -transform and laplace transform of the system.	10
CO4	Explain the transform theory and its importance to analyze signal and system.	8
CO5	Identify system properties based on impulse response and Fourier analysis.	9

Mapping															
CO				PO										PSO	
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	3	2	2	2	2	2	2	2	0	1	1	3	0	0	0
C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
C03	2	2	2	2	1	2	2	0	1	0	2	3	0	0	0
C04	2	2	2	3	2	3	2	0	0	1	2	3	0	0	0
C05	3	3	3	3	2	0	1	0	0	1	1	3	0	0	0

(First column spanning label: **Course Outcome**)

SUBJECT:-	Internship	
CORSE CODE:-	**100399**	**No. of Lecture**
CO1	Students are typically focuses on practical skill development and real-world application of their academic knowledge.	8
CO2	It is usually includes goals such as gaining hands-on experience in the field , applying theoretical knowledge to practical situation, improving problem-solving abilities and developing communication and teamwork skill with a professional environment.	10
CO3	It involves tasks related to design, analysis, implementation and troubleshooting of electronic system or communication devices.	8
CO4	To apply various soft skills such as time management, positive attitude and communication skills during performance of the tasks assigned in internship organization.	6
CO5	To determine the challenges and future potential for his / her internship organization in particular and the sector in general.	8

Mapping															
CO				PO										PSO	
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	1	1	1	1	1	2	0	0	1	3	1	1	0	0	0
C02	2	3	2	2	3	2	1	0	3	3	2	2	0	0	0
C03	2	3	2	3	3	2	2	0	1	2	2	2	0	0	0
C04	1	1	1	1	0	0	0	0	3	2	0	0	0	0	0
C05	1	1	2	2	2	2	1	0	2	2	0	2	0	0	0

(First column spanning label: **Course Outcome**)

Semester IV

SUBJECT:-	Analog Circuit	
CORSE CODE:-	**104401**	**No. of Lecture**
CO1	Illustrate working principle of different electronic circuit and their application in real life	7

CO		No. of Lecture
CO2	Define semiconductor device and different operating condition and their performance parameter.	7
CO3	Choose proper semiconductor devices depending upon application considering economic and technology up-gradation.	6
CO4	Employ mathematical and graphical analysis considering different practical issues modeling of semiconductor device; analyze the performance parameter of the system.	6
CO5	Recognize different signal processing circuit and the use in industrial, real life, modern control system application.	6
CO6	Use modeling/simulation parameters with standard equivalent circuit models to predict correctly the expected performance of various general-purpose electronic circuits.	8

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	2	1	2	2	1	0	0	1	0	0	0	0	0
	C02	2	2	2	2	2	0	1	0	0	1	0	0	0	0	0
	C03	2	2	2	1	2	2	1	0	0	1	0	0	0	0	0
	C04	3	2	2	2	3	0	1	0	0	1	0	0	0	0	0
	C05	2	3	3	1	2	0	1	0	0	1	0	0	0	0	0
	C06	3	3	2	2	3	2	1	0	0	1	0	0	0	0	0

SUBJECT:-	Analog Circuit	
CORSE CODE:-	**104401P**	**No. of Lecture**
CO1	It gives easy algorithms to solve many complex technical Computing problems.	3
CO2	To calculate the h parameters of CE Configuration & to assign the bipolar junction transistor using common amplifier	4
CO3	To design RC Coupled single stage BJT amplifier & to design Darlington amplifier using bipolar junction transistor	4
CO4	To plot V-I characteristics of a Transistor connected in CE configuration and Calculate the value of β, Input and Output Resistance.	3
CO5	To plot V-I characteristics of a Transistor connected in CB configuration and Calculate the value of α, Input and Output Resistance.	4

Course Outcome		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	2	2	1	2	0	2	2	0	1	1	1	0	0	0	0
	C02	2	2	1	2	0	2	2	0	1	1	1	0	0	0	0

C03	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0
C04	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0
C05	2	2	1	2	0	2	2	0	1	1	0	0	0	0	0

SUBJECT:-	Analog Communication	
CORSE CODE:-	**104402**	**No. of Lecture**
CO1	Evaluate the basics of communication systems and the sources and effects of noise in communication systems	7
CO2	Explain analog modulation and demodulation schemes and identify the circuits for these.	10
CO3	Evaluate the principles of SSB scheme, as well as techniques for transmission and reception of SSB signals	7
CO4	Evaluate the techniques and relevant parameters for FM transmission and reception. Compare and contrast FM and AM techniques.	7
CO5	Explain the scheme for phase modulation and circuits for the same. Compare and contrast PM and FM	5
CO6	Describe various techniques developed for angle modulation and detection	4

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	1	2	2	0	0	0	0	0	0	2	0	0	0
	C02	2	3	1	3	2	0	0	0	0	0	0	3	0	0	0
	C03	3	2	1	3	3	0	0	0	0	0	0	3	0	0	0
	C04	2	2	1	3	3	0	0	0	0	0	0	3	0	0	0
	C05	2	2	1	2	2	0	0	0	0	0	0	2	0	0	0
	C06	2	2	1	2	3	0	0	0	0	0	0	3	0	0	0

SUBJECT:-	Analog Communication Lab	
CORSE CODE:-	**104402P**	**No. of Lecture**
CO1	Introduction to MATLAB Programming.	4
CO2	Design AM Modulation and Demodulation Techniques.	4
CO3	Design FM Modulation and Demodulation Techniques.	4
CO4	Perform the DSB-SC Modulation and Demodulation Techniques.	4
CO5	Perform the SSB-SC Modulation and Demodulation Techniques.	4

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
	C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

SUBJECT:-	Digital Circuits	
CORSE CODE:-	104403	No. of Lecture
CO1	Convert different type of codes and number systems which are used in digital communication and computer systems.	8
CO2	Employ the codes and number systems converting circuits and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.	10
CO3	Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.	10
CO4	Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints	7
CO5	Design IC 555 timer- astable ,monostable and multivibrator.	5

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	2	2	2	2	2	2	2	3	2	1	3	0	0	0
	C02	2	2	3	3	2	2	2	2	1	2	2	3	0	0	0
	C03	2	2	2	2	1	2	2	0	2	1	2	3	0	0	0
	C04	2	2	2	3	2	3	2	0	2	2	2	3	0	0	0
	C05	3	2	3	3	2	0	1	0	0	1	1	3	0	0	0

SUBJECT:-	Digital Circuits Lab	
CORSE CODE:-	104403P	No. of Lecture
CO1	Describe the knowledge of basic logic gates and their design using universal gates.	4
CO2	Demonstrate the working of combinational and sequential circuits.	4
CO3	Appraise combinational/ sequential circuits and memories.	4
CO4	Integrate and experiment with controlled digital circuits and digital to analog converter.	4

CO		No. of Lecture
CO5	Schematize, simulate, and implement combinational and sequential circuits to solve real world problems using VHDL systems.	4

Course Outcome	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
	C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0
	C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
	C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
	C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

SUBJECT:-	Semiconductor Physics Devices	
CORSE CODE:-	**104405**	No. of Lecture
CO1	Describe and illustrate the Atoms, Electrons, Energy Bands and Charge carriers in semiconductor.	8
CO2	Sketch and explain the Carrier Transport Phenomena in semiconductor.	8
CO3	Illustrate with the sketch of the structure of PN Junction and Junction Di	8
CO4	Analyse schottky diode, PNP diode , varactor diode .	8
CO5	Appraise the principle of operation BJTs, schematize their characteristics curve	9

Course Outcome	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	3	2	3	2	3	3	2	2	1	1	2	3	0	0	0
	C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
	C03	2	2	2	2	1	2	2	0	1	0	2	3	0	0	0
	C04	2	2	2	3	2	3	2	0	0	1	2	3	0	0	0
	C05	3	3	3	3	2	0	1	0	0	1	1	3	0	0	0

SUBJECT:-	Semiconductor Physics Device Lab	
CORSE CODE:-	**104405P**	No. of Lecture
CO1	Draw the Forward and Reverse bias V-I Characteristics of a PN Junction diode and calculate its static and dynamic resistance.	4
CO2	Draw the static characteristics of a zener Diode.	4
CO3	Design Zener Diode as voltage regulator .	4
CO4	Draw input and output characteristics of a transistor connected in CE configuration.	4

CO5	Draw the output and transfer characteristics of a given JFET.		4

Course Outcome	Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
	C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0
	C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
	C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
	C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

SUBJECT:-	ELECTROMAGNETIC THEORY	
CORSE CODE:-	104404	**No. of Lecture**
CO1	To understand the fundamentals of electromagnetic theory & enhance the analytical skills in dealing with vector calculas, Coordinate systems.	5
CO2	Students should be able to calculate electric and magnetic fields in different scenarios, including point charges, current carrying wires and complex charge distribution	7
CO3	Develop the ability to solve complex problems involving electric and magnetic fields, boundary value problems, and electromagnetic waves.	6
CO4	To understand and solve boundary value problems, such as finding electric and magnetic fields at the interface between different materials.	8
CO5	Gain a deep understanding of Maxwell's equations, electric and magnetic fields, and their interrelation.	5
CO6	To Understand the propagation of electromagnetic waves, including their properties, behaviors and equations and apply this knowledge to various wave scenarios.	5
CO7	To Learn about transmission lines, impedance matching, and the efficient transfer of electromagnetic energy.	4

Course Outcome	Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	2	1	1	1	1	2	3	0	3	1	2	1	2	3	2
	C02	2	1	1	2	2	2	1	2	3	2	2	1	3	1	2
	C03	3	2	1	1	2	2	1	0	3	2	2	0	2	3	2
	C04	3	1	1	1	2	2	1	2	3	3	2	1	3	2	2
	C05	3	2	1	2	2	3	1	2	3	3	3	2	1	2	3
	C06	2	2	2	2	3	3	1	3	3	3	2	3	3	2	3
	C07	2	2	2	3	2	2	2	3	3	3	2	1	3	2	3

SUBJECT:-	Computer Network and Security	
CORSE CODE:-	104501	No. of Lecture
CO1	Explain the functions of the different layers of OSI protocol.	10
CO2	Draw the functional block diagram of wide area network(WAN),local area network(LANs) and wireless LANs(WLANs) and can be able to describe the function of each block.	10
CO3	Program for a given problem related TCP/IP protocol.	8
CO4	Configures DNS, DDNS, TELNET, EMAIL ,FTP, WWW ,HTTP, Bluetooth ,Firewalls using open source available software and tools.	6
CO5	Network security , RSA SSL Protocol, IPSEC,PGP, Firewall VPN	8

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	1	1	1	1	2	3	3	1	2	0	1	0	0	0
	C02	0	1	1	1	2	3	1	3	3	2	1	1	0	0	0
	C03	2	2	2	2	3	3	2	2	3	2	0	2	0	0	0
	C04	1	2	2	2	3	3	1	2	3	3	2	2	0	0	0
	C05	1	2	2	3	3	3	3	3	3	3	3	3	0	0	0

SUBJECT:-	Digital Signal Processing	
CORSE CODE:-	104502	No. of Lecture
CO1	1. Enumerate the basic concepts of signals and systems and their interconnections in a simple and easy-to-understand manner by summarizing different mathematical operations like folding, shifting, scaling, convolutions, Z-transform etc.	8
CO2	2. Design DFT and DTFT signals.	10
CO3	3. Determine transfer function and predict frequency response of discret	6
CO4	4. Design digital IIR and FIR filters using filter approximation theory, frequency transformation &window techniques.	6
CO5	5. Sub-divide and construct different realization structures.	10

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	2	3	2	0	1	0	0	1	1	3	0	0	0

Course Outcome		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
	C03	1	3	2	3	2	2	2	0	0	1	2	3	0	0	0
	C04	1	2	2	3	2	2	2	0	0	1	2	3	0	0	0
	C05	2	3	3	3	1	0	1	0	0	1	1	2	0	0	0

SUBJECT:-	Digital Signal Processing Lab	
CORSE CODE:-	104502P	No. of Lecture
CO1	Demonstrate understanding of MATLAB with signal processing perspective.	4
CO2	Design digital system and analyse its characteristics in transform domain.	4
CO3	Design and implement FIR and IIR filters.	4
CO4	Apply the knowledge of MATLAB to various set of signal processing problems.	4
CO5	Develop and apply the signal Processing Algorithms in various applications.	4

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
	C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0
	C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
	C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
	C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

SUBJECT:-	Linear control System	
CORSE CODE:-	104503	No. of Lecture
CO1	Model the linear system and study the control system component specification through classical approach	12
CO2	Understand the time response specification and its control	8
CO3	Analyze the absolute and relative stability	8
CO4	Understand Frequency response tools like bode plot and Nyquist plot.	6
CO5	Understand the introductory concept of state variable approach.	6

		Mapping														
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	2	2	3	3	3	2	0	0	2	3	2	0	0	0
	C02	2	2	2	2	1	2	1	0	0	3	3	2	0	0	0

CO															
C03	2	3	2	3	3	3	3	0	0	3	3	2	0	0	0
C04	3	3	2	2	1	2	1	0	0	3	3	2	0	0	0
C05	2	3	2	2	1	2	1	0	0	3	3	2	0	0	0

SUBJECT:-	Linear Integrated Circuit	
CORSE CODE:-	104504	No. of Lecture
CO1	Learn about the basic concepts for the circuit configuration for the design of linear integrated circuits and develops skill to solve engineering problems.	8
CO2	Learn about IC 555 timer, monostable and astable multivibrator.	8
CO3	Develop skills to design simple circuits using OP-AMP.	7
CO4	Gain knowledge about various multiplier circuits, modulators and demodulators.	7
CO5	Gain knowledge about PLL.	10

Mapping															
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	2	2	3	2	2	2	1	0	0	1	1	3	0	0	0
C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
C03	2	2	2	3	2	2	2	0	1	0	2	3	0	0	0
C04	1	2	2	3	2	2	2	0	0	1	2	3	0	0	0
C05	2	2	3	3	2	0	1	0	0	1	1	2	0	0	0

Course Outcome

SUBJECT:-	Linear Integrated Circuit Lab	
CORSE CODE:-	104504P	No. of Lecture
CO1	Design inverting op-amp.	4
CO2	Design non-inverting op-amp.	4
CO3	Design summing amplifier of inverting circuits and non inverting circuits.	4
CO4	Design integrator circuits using op-amp.	4
CO5	Design differentiator circuits using op-amp.	4

Mapping															
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0
C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

Course Outcome

SUBJECT:-	MICROPROCESSORS AND MICROCONTROLLERS	
CORSE CODE:-	104505	No. of Lecture
CO1	Understand the fundamentals of microprocessors and microcontrollers.	8
CO2	Discuss the architectures of microcontroller family	7
CO3	Illustrate the instruction set of microcontrollers and microprocessor and do assembly language programming	10
CO4	Study the interfacing designs of peripherals like I/O ,A/D,D/A and timers	8
CO5	Develop various systems with the help of microprocessors.	7

Mapping															
CO		PO												PSO	
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome C01	1	1	0	0	2	0	0	0	0	1	1	3	0	0	0
C02	2	0	0	1	2	0	0	0	0	1	1	3	0	0	0
C03	2	2	1	3	2	0	0	0	0	2	1	2	0	0	0
C04	2	3	2	3	2	0	1	0	0	2	2	3	0	0	0
C05	2	2	2	3	2	0	1	0	0	2	2	3	0	0	0

SUBJECT:-	Microprocessor and Microcontroller lab	
CORSE CODE:-	104505P	No. of Lecture
CO1	Understand and apply the fundamentals of assembly level programming of microprocessors.	4
CO2	Work with standard microprocessor real time interfaces including serial ports, digital-to-analog converters, and analog-to-digital converters.	6
CO3	Analyze abstract problems and apply a combination of hardware and software to solve problem.	4
CO4	Use standard test and measurement equipment to evaluate digital interfaces.	4

Mapping															
CO		PO												PSO	
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome C01	2	2	1	3	2	0	0	0	0	2	1	3	0	0	0
C02	2	2	1	3	2	0	0	0	0	2	2	3	0	0	0
C03	2	2	1	3	2	0	0	0	0	2	2	3	0	0	0
C04	2	1	1	3	0	0	0	0	1	1	0	1	0	0	0

SUBJECT:-	Probability Theory And Stochastic process	

CORSE CODE:-	104506	No. of Lecture
CO1	Learn about the sets, probability spaces, conditional and independent probabilities,; Poisson approximation; Bernoulli trials their expectations and moments.	8
CO2	Study about the Normal, Exponential continuous distribution and their properties.	6
CO3	Analyse Bivariate distributions and their properties; Markov, Chebyshev and Chernoff bounds.	6
CO4	Describe random sequences; Limit and Central Limit theorems.	10
CO5	Discuss random, stationary process; Ergodicity and Markov chain Processes.	10

		Mapping														
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	3	1	2	1	0	1	0	0	1	2	0	0	0	0
	C02	3	3	1	3	2	0	0	0	0	1	0	0	0	0	0
	C03	3	0	1	0	0	0	0	0	0	0	0	2	0	0	0
	C04	3	3	2	2	2	3	2	0	0	0	2	0	0	0	0
	C05	3	3	1	2	2	0	1	0	0	0	2	2	0	0	0

SUBJECT:-	Summer Entrepreneurship-II	
CORSE CODE:-	100510	No. of Lecture
CO1	It aims to cultivate entrepreneurial skills within the context of electronics and communication.	8
CO2	It could involve fostering an understanding of business models, market analysis, and feasibility studies specifically within the tech industry.	12
CO3	The goals might include developing skills in ideation, prototyping, and business planning, and understanding the essentials of technology commercialization.	10
CO4	Furthermore, students might learn about intellectual property rights, pitching, and the process of bringing electronic and communication innovations to the market.	12

		Mapping														
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	1	2	1	0	2	1	0	3	2	2	2	0	0	0
	C02	1	2	2	1	1	2	3	0	3	3	2	3	0	0	0
	C03	1	2	3	2	2	2	3	2	3	3	3	3	0	0	0

| | C04 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 2 | 0 | 0 | 0 |

Semester VI

SUBJECT:-	BIOLOGY FOR ENGINEERS	
CORSE CODE:-	100601	No. of Lecture
CO1	Describe how biological observations of 18th Century that lead discoveries.	4
CO2	Conveythat classification per seis not biology is all about highlight the underlaying criteria such as mophplogical, biochemical, and ecological.	7
CO3	Highlight the concepts of recessiveness and dominance during the passage of genetic material from parents to offsprings.	8
CO4	Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine .	5
CO5	Classify enzymes and distinguish between different mechanisms of enzymes action .	5
CO6	Identify DNA as a genetic material in the molecular basis of information trasfer.	7

		Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	0	1	1	1	0	0	3	0	1	0	1	0	0	0
	C02	2	1	1	1	1	0	1	2	1	2	0	1	0	0	0
	C03	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0
	C04	2	1	1	1	0	2	0	2	0	1	1	0	0	0	0
	C05	0	1	0	1	2	0	0	0	0	1	0	0	0	0	0
	C06	0	1	2	1	3	0	1	0	1	1	0	0	0	0	0

SUBJECT:-	Computer Organization & Architecture	
CORSE CODE:-	104601	No. of Lecture
CO1	Understand the basics of instructions sets and their impact on processor design	8
CO2	Demonstrate an understanding of the design of the functional units of a digital computer system.	7
CO3	Evaluate cost performance and design trade-offs in designing and constru	6
CO4	Design a pipeline for consistent execution of instructions with minimum hazards	7
CO5	Manipulate representations of numbers stored in digital computers	12

Mapping															
Course Outcome	**CO**	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	2	3	2	3	1	0	1	0	0	1	1	2	0	0	0
	C02	2	2	3	3	2	2	2	0	0	1	2	3	0	0	0
	C03	1	3	2	3	2	2	2	0	0	1	2	3	0	0	0
	C04	1	2	2	3	2	2	2	0	0	1	2	3	0	0	0
	C05	0	3	2	3	1	0	1	0	0	1	1	2	0	0	0

SUBJECT:-	Digital Communication	
CORSE CODE:-	**104602**	**No. of Lecture**
CO1	Demonstrate the concept of sampling, Quantization and various waveform-coding schemes.	8
CO2	Apply the concepts of various baseband transmission schemes.	8
CO3	Design and develop the different digital modulation systems.	8
CO4	Apply the concepts of information theory for digital communication systems.	8
CO5	Apply the concepts of spread spectrum techniques for digital communication.	8

Mapping															
Course Outcome	**CO**	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	3	2	2	2	2	2	2	0	0	1	1	3	0	0	0
	C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
	C03	2	2	2	2	1	2	2	0	1	0	2	3	0	0	0
	C04	2	2	2	3	2	3	2	0	0	1	2	3	0	0	0
	C05	2	3	3	3	2	0	1	0	0	1	1	2	0	0	0

SUBJECT:-	Digital Communication Lab	
CORSE CODE:-	**104602P**	**No. of Lecture**
CO1	Analyse the signal sampling, quantization and its reconstruction.	4
CO2	Design the modulators and demodulators for various digital modulation techniques such as ASK, PSK, FSK, QPSK, and QAM	4
CO3	Design system for Time Division multiplexing Technique.	4
CO4	Design system for Frequency Division multiplexing Technique.	4
CO5	Perform the simulation of DPSK using Matlab.	4

Mapping															
CO	**PO**												**PSO**		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03

Course Outcome		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	1	2	1	2	2	2	0	0	0	2	1	3	0	0	0
	C02	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0
	C03	2	3	1	2	3	2	0	0	0	2	1	2	0	0	0
	C04	2	3	1	3	2	2	0	0	0	2	1	2	0	0	0
	C05	2	2	1	3	3	2	0	0	0	2	1	2	0	0	0

SUBJECT:-	Electronics Instruments & Measurement	
CORSE CODE:-	**104604**	**No. of Lecture**
CO1	To understand the Standards of Measurement and their evaluation,Calibration, Accuracy, Precision Sensitivity, Resolution, Noise, etc.	8
CO2	To understand the measurements of voltage, current, power and energy, power factor and frequency,Dynamometer ,Resonance, moving coil and moving iron frequency meters, Voltmeter multipliers, Ammeter shunt, Current and Potential Transformers.	7
CO3	To apply the process of using the Bridges- Kelvin double bridge, Wheatstone bridge and Carey- Foster bridge; A.C. bridges: Maxwell Bridge, Hay and Owen bridges, Anderson bridge, Wien Bridges, Schering Bridges & Heaviside-Campbell Bridge.	6
CO4	To understand the Potentiometer's Principle, Standardization and application: D.C. Potentiometers, A.C.Potentiometers.	7
CO5	To know the process of Magnetic measurements : Measurement of magnetic flux by ballistic galvanometer and fluxmeter, Determination of B-H curve and hysteresis loop.	12

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	3	2	2	3	0	1	0	0	2	0	0	0	0	0
	C02	3	3	2	3	3	0	0	0	0	2	0	0	0	0	0
	C03	3	3	3	2	2	0	0	0	0	2	0	0	0	0	0
	C04	3	3	3	2	3	0	1	0	0	2	0	0	0	0	0
	C05	3	2	2	3	3	0	0	0	0	2	0	0	0	0	0

SUBJECT:-	Electronics Instruments & Measurement Lab	
CORSE CODE:-	**104604P**	**No. of Lecture**
CO1	To study the transient & study state response of series RLC circuit	3
CO2	To determine the unknown capacitance using De Sauty's Bridge & Schering method.	4

CO		No. of Lecture
CO3	To study the working of Kelvin Double bridge & determine the unknown resistance.	4
CO4	To study the characteristics of thermo couple sensor.	4
CO5	To measure the energy consumed in a single phase circuit.	5

	Mapping																
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	3	2	3	3	0	1	0	0	2	0	0	0	0	0
	C02	3	3	2	3	3	0	1	0	0	2	0	0	0	0	0
	C03	3	3	2	3	3	0	1	0	0	2	0	0	0	0	0
	C04	2	2	2	3	3	0	0	0	0	2	0	0	0	0	0
	C05	3	3	2	3	3	0	0	0	0	2	0	0	0	0	0

SUBJECT:-	Digital CMOS-VLSI Design	
CORSE CODE:-	104606	No. of Lecture
CO1	Describe the fabrication process and properties of MOS devices.	10
CO2	Analyze the impact of scaling on MOS circuits	7
CO3	Comprehend the need of hardware description language and its features	6
CO4	Explain various modeling styles of architecture declaration	7
CO5	Design combinational and sequential circuits using VHDL	8

Course Outcome	Mapping																
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	2	2	1	1	1	0	0	0	0	2	1	2	0	0	0
	C02	1	2	2	1	2	0	0	0	0	2	2	3	0	0	0
	C03	1	2	2	1	2	0	0	0	0	1	2	3	0	0	0
	C04	1	2	2	2	2	0	0	0	0	2	2	3	0	0	0
	C05	1	2	1	2	2	0	0	0	0	2	1	2	0	0	0

Semester VII

SUBJECT:-	Antenna & Wave Propagation	
CORSE CODE:-	100710	No. of Lecture
CO1	Understand and differentiate between various types of Waveguide, such as Rectangular Waveguide, Circular Waveguide, and their specific application.	6

CO	Description	No. of Lecture
CO2	Ability to analyze cavity resonators such as rectangular cavity resonator, circular cavity resonator and their specific application.	7
CO3	Understand and differentiate between various antenna types, such as Dipole antenna, patch antenna, YAGI antennas, and their specific application.	6
CO4	Ability to analyze and predict radiation pattern of different antenna, including directional, Omni-directional and sector- specific patterns.	8
CO5	Proficiency in designing antennas for specific frequency range and applications, considering factors like Impedance matching and radiation efficiency.	6
CO6	Knowledge of transmission line theory and the ability to design and implement impedance matching networks for antenna.	5
CO7	Skill in using software tools for simulating antenna performance and predicting how antenna will behave in various scenarios.	4

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	1	0	3	0	3	1	2	1	2	3	2
	C02	3	1	1	2	2	2	1	2	3	2	2	1	3	1	2
	C03	3	2	1	1	2	0	1	0	3	2	2	0	2	3	2
	C04	3	2	1	1	2	2	1	2	3	3	2	1	3	2	2
	C05	2	2	1	2	2	2	1	2	3	3	3	2	1	2	3
	C06	2	2	2	2	3	2	1	2	3	3	2	3	3	2	3
	C07	2	2	2	3	2	2	2	2	3	3	2	1	3	2	3

SUBJECT:-	Cost Management of Engineering Projects	
CORSE CODE:-	104702	No. of Lecture
CO1	Understand the concepts strategic cost management process.	8
CO2	Apply cost concepts in decision-making and cost management projects.	8
CO3	Implement various stages of project execution with a team project.	8
CO4	Analyse various decision-making problems.	8
CO5	Evaluate different qualitative techniques and cost behaviour.	8

	Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	2	2	1	0	0	3	3	3	2	3	3	0	0	0
	C02	1	1	3	1	0	0	3	2	3	3	3	3	0	0	0
	C03	1	2	3	1	0	0	3	3	3	3	3	3	0	0	0
	C04	1	2	3	1	0	0	3	3	3	3	3	3	0	0	0

C05	1	1	2	1	0	0	3	3	3	2	2	2	0	0	0

SUBJECT:-	High Speed electronics	
CORSE CODE:-	**104708**	**No. of Lecture**
CO1	Understand the concepts of high speed data communication.	10
CO2	Understand the methodologies for design of high speed buses.	8
CO3	Analyze the effect of noise on the performance of the high speed circuits	10
CO4	Design of printed circuit board which can handle high speed power transfer.	10

	Mapping														
CO	**PO**												**PSO**		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	1	2	1	2	2	0	1	0	0	0	0	2	0	0	0
C02	2	2	2	2	3	0	2	0	0	0	0	3	0	0	0
C03	2	2	2	2	3	0	2	0	0	0	0	3	0	0	0
C04	1	2	2	2	3	0	2	0	0	0	0	3	0	0	0

(Course Outcome)

SUBJECT:-	Wireless Communication	
CORSE CODE:-	**104703**	**No. of Lecture**
CO1	Ability to understand and analyze Fading, Cordless telephone system.	10
CO2	Ability to suggestan Digital Signal modulation for a given application.	7
CO3	Ability to operate various Multiple access system	7
CO4	Ability to acquire knowledge on various wireless communications network,GPRS,Wireless LAN'S	8
CO5	Ability to understand basics of Diversity	8

	Mapping														
CO	**PO**												**PSO**		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	2	1	1	1	1	2	3	0	0	2	3	3	0	0	0
C02	1	1	1	2	2	0	3	0	0	3	2	2	0	0	0
C03	0	1	1	1	2	0	3	0	0	2	1	1	0	0	0
C04	2	0	1	1	0	3	3	0	0	2	1	1	0	0	0
C05	2	0	1	1	1	0	2	0	0	0	1	3	0	0	0

(Course Outcome)

SUBJECT:-	Business Analytics

CORSE CODE:-	104701	No. of Lecture
CO1	Identify appropriate data analytic techniques to address business problems.	8
CO2	Apply data analytic techniques to solve problems in a variety of business contexts.	8
CO3	Integrate the knowledge and skills acquired to conduct research in an industry setting.	8
CO4	Forcasting technique, model , monte carlo simulationn,deal with ambiguity and uncertainty,	10
CO5	Decision making and analysis ,Communicate the results of technical analysis to non-technical audiences.	8

	Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	0	1	0	1	0	0	2	3	2	2	0	2	0	0	0
	C02	0	1	1	1	2	2	1	3	3	2	1	1	0	0	0
	C03	1	2	1	2	3	2	1	2	3	2	0	2	0	0	0
	C04	0	3	2	2	3	3	2	2	3	3	3	3	0	0	0
	C05	1	3	2	3	3	3	3	3	3	3	3	3	0	0	0

SUBJECT:-	Summer Entrepreneurship-III	
CORSE CODE:-	100702	No. of Lecture
CO1	The focus might shift toward advanced business and leadership skills within the realm of electronics and communication.	7
CO2	It could include honing strategic planning abilities, understanding venture capital, and mastering the intricacies of scaling tech-based enterprises.	8
CO3	Students might delve deeper into innovation management, exploring international markets, and learning to navigate regulatory and compliance challenges specific to technology businesses.	10
CO4	Additionally, fostering a strong foundation in ethical and socially responsible entrepreneurship within the tech sector might be a part of the outcomes.	7
CO5	Unterstanding of Issues associated with securing and managing financial resources in new and established organisations.	8

	Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03

Course Outcome		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
	C01	1	1	1	1	1	2	1	0	3	3	3	3	0	0	0
	C02	0	2	3	3	2	2	3	0	3	3	3	3	0	0	0
	C03	1	2	3	2	2	2	3	0	3	3	3	3	0	0	0
	C04	1	1	2	1	0	3	3	3	1	2	2	2	0	0	0
	C05	1	2	3	1	2	2	3	0	2	3	3	2	0	0	0

SUBJECT:-	Project-I	
CORSE CODE:-	100709	No. of Lecture
CO1	In Project-I students typically include developing skills in project management, research, problem-solving, and applying theoretical knowledge to practical scenarios.	4
CO2	It involves enhancing abilities in critical thinking, innovation, technical presentation, and documentation.environment.	5
CO3	The outcomes might also focus on fostering teamwork, communication, and a deep understanding of the chosen project's domain.	6
CO4	Apply the theoretical concepts to solve industrial problems with teamwork and multidisciplinary approach.	4
CO5	Reflect and evaluate on experiences that might lead to future employment.	3

	Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	2	2	2	2	0	1	0	1	3	2	1	0	0	0
	C02	2	2	3	3	3	2	3	2	1	2	2	2	0	0	0
	C03	1	1	2	2	1	2	1	0	3	2	3	3	0	0	0
	C04	2	2	2	2	3	0	2	0	2	3	2	2	0	0	0
	C05	1	1	2	1	1	2	1	0	3	1	3	3	0	0	0

Semester VIII

SUBJECT:-	Microwave Theory and Techniques	
CORSE CODE:-	100806	No. of Lecture
CO1	Demonstrate a solid understanding of fundamental microwave concepts, including electromagnetic wave behavior in microwave spectrum and the significance of microwave frequencies.	6
CO2	Gain expertise in the operation and practical application of key microwave components like waveguides, resonators & microwave tubes.	7

CO3	Develop the ability to analyze and design microwave networks, including transmission lines, waveguides and matching networks.	6
CO4	Design microwave circuit such as amplifiers, oscillators and mixers while considering stability, gain and noise figure.	8
CO5	Understand measurement techniques specific to microwave frequencies, including vector network analyzer (VNA) measurements and S-parameter analysis.	6
CO6	Explore microwave communication systems, including microwave links, radar systems, and satellite communication.	5
CO7	Understand the impact of noise and power considerations in microwave circuits and systems, and learn techniques to mitigate these effects.	5

		Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	1	1	1	1	0	3	0	3	1	2	1	2	3	2
	C02	3	1	1	2	2	2	1	2	3	2	2	1	3	1	2
	C03	3	2	1	1	2	0	1	0	3	2	2	0	2	3	2
	C04	3	2	1	1	2	2	1	2	3	3	2	1	3	2	2
	C05	2	2	1	2	2	2	1	2	3	3	3	2	1	2	3
	C06	2	2	2	2	3	2	1	2	3	3	2	3	3	2	3
	C07	2	2	2	3	2	2	2	2	3	3	2	1	3	2	3

SUBJECT:-	Internet of Things	
CORSE CODE:-	**100814**	**No. of Lecture**
CO1	To understand the basics of IoT Networking	9
CO2	To learn working of IoT Connectivity/Medium access protocols	9
CO3	To understand about IoT network layer/communication protocols	9
CO4	To Analyze various IoT Application layer Protocols	9
CO5	To prepare sensor based project using Raspberry PI,creating camera	9

		Mapping															
	CO	**PO**												**PSO**		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	1	1	1	1	1	2	3	3	1	2	0	1	0	0	0
	C02	1	1	1	1	2	3	1	3	3	2	1	1	0	0	0
	C03	2	2	2	2	3	3	2	2	3	2	0	2	0	0	0
	C04	1	2	2	2	3	3	1	2	3	3	2	2	0	0	0
	C05	2	3	3	3	3	3	3	3	3	3	3	3	0	0	0

SUBJECT:-	Wireless Sensor Network	

CORSE CODE:-	104804	No. of Lecture
CO1	Identify different issues in wireless ad hoc and sensor networks.	8
CO2	To analyze protocols developed for ad hoc and sensor networks.	8
CO3	To identify and address the security threats in ad hoc and sensor network	6
CO4	Establish a Sensor network environment for different type of applications.	6
CO5	To analyze sensor network for latest maritime applications.	12

		Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	2	2	2	3	1	0	1	0	0	1	1	2	0	0	0
	C02	2	2	3	3	2	2	2	2	0	1	2	3	0	0	0
	C03	1	3	2	3	2	2	2	0	0	1	2	3	0	0	0
	C04	1	2	2	3	2	2	2	0	0	1	2	3	0	0	0
	C05	0	3	2	3	1	0	1	0	0	1	1	2	0	0	0

SUBJECT:-	Transducers and Sensors	
CORSE CODE:-	104812	No. of Lecture
CO1	Use concepts in common methods for converting a physical parameter into an electrical quantity	6
CO2	Classify and explain with examples of transducers, including those for measurement of temperature, strain, motion, position and light	7
CO3	Choose proper sensor comparing different standards and guidelines to make sensitive measurements of physical parameters like pressure, flow, acceleration, etc	7
CO4	Predict correctly the expected performance of various sensors	6
CO5	Locate different type of sensors used in real life applications and paraphrase their importance	6
CO6	Set up testing strategies to evaluate performance characteristics of different types of sensors and transducers and develop professional skills in acquiring and applying the knowledge outside the classroom through design of a real-life instrumentation system.	8

		Mapping															
	CO	PO												PSO		
		P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
Course Outcome	C01	3	3	1	1	3	2	1	0	0	1	2	2	0	0	0
	C02	3	2	1	3	2	0	0	0	1	2	1	3	0	0	0

CO															
C03	2	1	1	0	1	2	1	0	0	1	1	0	0	0	0
C04	2	1	1	1	0	2	3	2	0	1	2	2	0	0	0
C05	1	1	1	2	1	0	0	0	0	3	1	1	0	0	0
C06	2	1	1	1	1	2	0	2	0	1	0	1	0	0	0

SUBJECT:-	Project-II	
CORSE CODE:-	100801	No. of Lecture
CO1	The course outcomes for a major project, students often revolve around advanced applications of technical skills, in-depth research, and the ability to handle complex problems independently.	5
CO2	It emphasizes the development of a comprehensive understanding of project design, execution, and evaluation.	4
CO3	Students are expected to demonstrate mastery in project planning, analysis, and implementation, as well as effective communication, critical thinking, and possibly innovation in the chosen area of study.	6
CO4	Design and develop the skills to make software/hardware, related to project for serving the society.	4
CO5	Apply engineering knowledge to solve various industrial problems and analyze ethical practices and tools used for different technologies.	6

	Mapping														
CO	PO												PSO		
	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	PS01	PS02	PS03
C01	1	3	1	2	2	0	1	0	2	1	1	1	0	0	0
C02	1	2	2	3	3	2	3	0	2	2	1	3	0	0	0
C03	2	1	3	3	2	2	3	0	3	3	3	3	0	0	0
C04	2	2	1	2	3	0	0	0	2	1	0	0	0	0	0
C05	1	2	3	3	3	3	3	3	3	3	3	3	0	0	0

Course Outcome