Department of Electronic & Communication Engineering

R23 Course outcomes of all courses

COURSE NAME	Linear Algebraic and calculus			COURSE CODE		C101
UNIVERSITY CODE	23SH1T04	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C101.1	Develop and use of matrix algebra techniques that are needed by engineers for practical applications					
C101.2	Utilize mean value theorems to real life problems					
C101.3	Familiarize with functions of several variables which is useful in optimization					
C101.4	Learn important tools of calculus in higher dimensions.					
C101.5	Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three					

COURSE NAME	Engineering physics			COURSE CODE		C102
UNIVERSITY CODE	23SH1T02	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C102.1	Analyze the intensity variation of light due to polarization, interference and diffraction.					
C102.2	Familiarize with the basics of crystals and their structures					
C102.3	Summarize various types of polarization of dielectrics and classify the Magnetic materials					
C102.4	Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.					
C102.5	Identify the type of semiconductor using Hall effect					

COURSE NAME	Introduction to C programming			COURSE CODE		C103
UNIVERSITY CODE	23ES1T03	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C103.1	Write algorithms and to draw flowcharts for solving problems					
C103.2	Evaluate different types of operators i n C , including understanding operator precedence, associativity, expressions, and type conversions					
C103.3	Apply selection statements (if, if-else, nested i f, else-if l adder) and iterative statements (while, do-while, for, nested l oops) to control t he f low of program execution based on different conditions					
C103.4	Solve programming problems using appropriate concepts like arrays, strings, structures & unions, functions, and pointers.					
C103.5	Develop sample programs that incorporates pointer applications and file handling techniques.(L3)					

COURSE NAME	BEEE			COURSE CODE		C104
UNIVERSITY CODE	23ES1T02	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C104.1	Understand the problem solving concepts associated to AC and DC circuits and apply theorems to circuits.					
C104.2	Understand the construction and operation of AC and DC machines, measuring instruments					
C104.3	Analyse the Electricity bill calculations and layout representation of electrical Power systems					

C104.4	Understanding operations of CE amplifier and basic concept of feedback amplifier
C104.5	TAnalyse the operation of half wave, full wave bridge rectifiers and understand the instrumentation system
C104.6	Analyse the Number Systems; application of Logic gates and design of digital circuits

COURSE NAME	Engineering Graphics			COURSE CODE		C105
UNIVERSITY CODE	23ES1T04	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C105.1	Understand the principles of engineering drawing, including engineering curves, scales, orthographic and isometric projections					
C105.2	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views					
C105.3	Understand and draw projection of solids in various positions in first quadrant.					
C105.4	Understand principles behind development of surfaces and draw surfaces for a cone, prism, pyramid, cylinder and cube					
C105.5	Prepare isometric and perspective sections of simple solids.					

COURSE NAME	IT workshop			COURSE CODE		C106
UNIVERSITY CODE	23ES1L04	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C106.1	Demonstrate Assemble and dissemble components of a PC					
C106.2	Identify Hardware components and inter dependencies.					
C106.3	Illustrate how to safeguard computer systems from viruses/worms					
C106.4	Create Document/ Presentation preparationa					
C106.5	Practice and perform calculations using spreadsheets					

COURSE NAME	CP lab			COURSE CODE		C107
UNIVERSITY CODE	23ES1L03	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C107.1	Evaluate different types of operators in C, including understanding operator precedence, associativity, expressions, and type conversions.					
C107.2	Apply selection statements (if, if-else, nested if, else-if ladder) and iterative statements (while, do-while, for, nested loops) to control the flow of program execution based on different conditions.					
C107.3	Solve programming problems using appropriate concepts like arrays, strings, structures & unions functions, and pointers.					
C107.4	Develop sample programs that incorporates pointer applications and file handling techniques.(L3)					

COURSE NAME	Engineering physics lab			COURSE CODE		C108
UNIVERSITY CODE	23SH1L02	YEAR/SEM	I/I	REGULATION		R23
CO.NO	Course Outcomes					
C108.1	Operate optical instruments like travelling microscope and spectrometer.					
C108.2	Estimate the wavelengths of different colours using diffraction grating.					
C108.3	Plot the intensity of the magnetic field of circular coil carrying current with distance					
C108.4	Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively					
C108.5	Calculate the band gap of a given semiconductor					

COURSE NAME	BEEE lab			COURSE CODE	C109
UNIVERSITY CODE	23ES1L01	YEAR/SEM	I/I	REGULATION	R23

CO.NO	Course Outcomes
C109.1	Understand the Electrical circuit design concept; measurement of resistance, power, power factor; concept of wiring and operation of Electrical Machines and Transformer.
C109.2	Apply the theoretical concepts and operating principles to derive mathematical models for circuits, Electrical machines and measuring instruments; calculations for the measurement of resistance, power and power factor.
C109.3	Analyse various characteristics of electrical circuits, electrical machines and measuring instruments. Design suitable circuits and methodologies for the measurement of various electrical parameters; Household and commercial wiring
C109.4	Understand the usage of electronic measuring instruments and testing of various electronic components
C109.5	Understand the operation and performance of digital logic circuits. .

COURSE NAME	NSS/ Community service			COURSE CODE	C110
UNIVERSITY CODE	23SH1L06	YEAR/SEM	I/I	REGULATION	R23

CO.NO	Course Outcomes
C110.1	support the importance of discipline,character and service motto
C110.2	Solve some societal issues by applying acquired knowledge , facts, and techniques
C110.3	Motivate the importance of human relationships by analyzing social problems
C110.4	Determine to extend their help for the fellow begins and downtrodden people
C110.5	Survey different business strategies

COURSE NAME	English			COURSE CODE	C201
UNIVERSITY CODE	23SH2T01	YEAR/SEM	I/II	REGULATION	R23

CO.NO	Course Outcomes
C201.1	Understand the context, topic, and pieces of specific information from social or transactional dialogues
C201.2	Apply grammatical structures to formulate sentences and correct word forms
C201.3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
C201.4	Evaluate reading / listening texts and to write summaries based on globalcomprehension of these texts.
C201.5	Create a coherent paragraph, essay, and resume.

COURSE NAME	Chemistry			COURSE CODE	C202
UNIVERSITY CODE	23SH2T03	YEAR/SEM	I/II	REGULATION	R23

CO.NO	Course Outcomes
C202.1	Understand the basic quantum-mechanical approach to deriving molecular orbitals from atomic orbitals.
C202.2	Understand about Nanomaterials, semiconductors, superconductors and capacitors for modern assist in engineering technology.
C202.3	Compare the materials of construction for battery and Electrochemical sensors.
C202.4	Understand basic chemistry and technology involved in the manufacture of various types of polymers, plastics, Elastomers, their properties, applications, characterization, impact on environment.
C202.5	Analyze the principles of different analytical instruments and their applications and can summarize the concepts of Instrumental methods.

COURSE NAME	DE&VC	COURSE CODE	C203

UNIVERSITY CODE	23SH2T05	YEAR/SEM	I/II	REGULATION		R23
CO.NO	**Course Outcomes**					
C203.1	Solve the differential equations related to various engineering fields					
C203.2	Solve the higher order linear differential equations					
C203.3	Identify solution methods for partial differential equations that model physical processes.					
C203.4	Interpret t he ph ysical m eaning of di fferent ope rators s uch as gradient, curl and divergence.					
C203.5	Estimate the work done against a field, circulation and flux using vector calculus.					

COURSE NAME	BC&ME			COURSE CODE		C204
UNIVERSITY CODE	23ES2T01	YEAR/SEM	I/II	REGULATION		R23
CO.NO	**Course Outcomes**					
C204.1	Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society. Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.					
C204.2	Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.					
C204.3	Realize t he i mportance of T ransportation i n nation's e conomy a nd the engineering measuresrelated t o T ransportation. U nderstand t he i mportance of W ater S torage a nd Conveyance Structures so that the social responsibilities of water conservation will be appreciated					
C204.4	Understand the different manufacturing processes.					
C204.5	Explain the basics of thermal engineering and its applications					
C204.6	Describe the working of different mechanical power transmission systems and power plants.					

COURSE NAME	Network Analysis			COURSE CODE		C205
UNIVERSITY CODE	23EC2T01	YEAR/SEM	I/II	REGULATION		R23
CO.NO	**Course Outcomes**					
C205.1	Remembering the basic electrical elements and different fundamental laws.					
C205.2	Understand the network reduction techniques, transformations, concept of self-inductance and mutual inductance, phasor diagrams, resonance and network theorems					
C205.3	Apply the concepts to obtain various mathematical and graphical representations.					
C205.4	Analyse nodal and mesh networks, series and parallel circuits, steady state response, different circuit topologies (with R, L and C components).					
C205.5	Evaluation of Network theorems, electrical, magnetic and single-phase circuits.					

COURSE NAME	Chemistry lab			COURSE CODE		C206
UNIVERSITY CODE	23SH2L03	YEAR/SEM	I/II	REGULATION		R23
CO.NO	**Course Outcomes**					
C206.1	Determine the cell constant and conductance of solutions					
C206.2	Prepare advanced polymer Bakelite materials.					
C206.3	Measure the strength of an acid by conductometric method					
C206.4	Analyse the IR spectra of some organic compounds.					
C206.5	Calculate strength of acid in Pb-Acid battery					

COURSE NAME	English Lab			COURSE CODE		C207
UNIVERSITY CODE	23SH2L01	YEAR/SEM	I/II	REGULATION		R23
CO.NO	**Course Outcomes**					

C207.1	Understand the rules of accent and apply them in the communication
C207.2	Understand role play techniques and present oration skills
C207.3	Analyse and speak general questions on familiar topics such as home, family, work, studies and interests;
C207.4	Evaluate on the topics of group discussions and debates
C207.5	Apply various skills and techniques to face interviews

COURSE NAME	Engineering Workshop			COURSE CODE		C208
UNIVERSITY CODE	23ES2L02	YEAR/SEM	I/II	REGULATION		R23
CO.NO	Course Outcomes					
C208.1	Identify workshop tools and their operational capabilities.					
C208.2	Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding					
C208.3	Apply fitting operations in various applications.					
C208.4	Apply basic electrical engineering knowledge for House Wiring Practice					
C208.5	Apply basic plumbing tools to prepare pipe joints using couplings and for different diameters of pipe					

COURSE NAME	NA& simulation Lab			COURSE CODE		C209
UNIVERSITY CODE	23EC2L01	YEAR/SEM	I/II	REGULATION		R23
CO.NO	Course Outcomes					
C209.1	Construct different network circuits based on theorems					
C209.2	Analyse the transient analysis of R-L-C circuits					
C209.3	Analyze the steady state respone of R-L-C circuit in the laplace transform					
C209.4	Distinguish differnt coupled circuits					
C209.5	Compare the result of different two port network					

COURSE NAME	Health and wellness, Yoga and sports			COURSE CODE		C210
UNIVERSITY CODE	23SH2L05	YEAR/SEM	I/II	REGULATION		R23
CO.NO	Course Outcomes					
C210.1	Understand the iportance of yoga and sports for physical fitness and sound health					
C210.2	Demonstrate an understanding of health-related fitness components					
C210.3	compare and contrast various activities thet help enchnce their health					
C210.4	Assesscurrent personal fitness levels					
C210.5	Analyze the process of organic farming at differnt levels					

COURSE NAME	PRP			COURSE CODE		C301
UNIVERSITY CODE	23SH3T03	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C301.1	Compare the conditional distribution functions and exponential distribution functions					
C301.2	Perform operations on single and multiple Random variables					
C301.3	Determine the Spectral and temporal characteristics of Random Signals					
C301.4	Characterize LTI systems driven by stationary random process by using ACF sandPSDs					
C301.5	Analyze the concepts of Complex variable and Complex integration inCommunication systems					

COURSE NAME	UHV			COURSE CODE		C302
UNIVERSITY CODE	23SH3T01	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C302.1	Define the terms like Natural Acceptance, Happiness and Prosperity					
C302.2	Identify one's self, and one's surroundings					
C302.3	Apply what they have learnt to their own self in different day-to-day settings in real life					
C302.4	Relate human values with human relationship and human society.					
C302.5	Justify the need for universal human values and harmonious existence					
C302.6	Develop as socially and ecologically responsible engineers					

COURSE NAME	SIGNAL AND SYSTEM			COURSE CODE		C303
UNIVERSITY CODE	23ES3T04	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C303.1	Differentiate the various classifications of signals and systems					
C303.2	Analyse the frequency domain representation of signals using Fourier concepts					
C303.3	Classify the systems based on their properties and determine the response of LTISystems					
C303.4	Apply the sampling process and various types of sampling techniques					
C303.5	Implement Laplace and z-transforms to analyze signals and Systems					

COURSE NAME	Electronic Devices and Circuits			COURSE CODE		C304
UNIVERSITY CODE	23EC3T01	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C304.1	Analyze Diode and Special diode voltage–Current (V-I) characteristics					
C304.2	Apply the Basic diodes and Special diodes in various electronic circuit applications					
C304.3	Derive stabilization factors S, S', S" for fixed resistor, feedback resistor and voltage divider biasing circuits					
C304.4	Analyse small-signal low-frequency transistor amplifier circuits employing BJT in various arrangements					
C304.5	Compare Common source amplifier, Common drain and common gate amplifier characteristics					

COURSE NAME	Switching Theory and Logic Design			COURSE CODE		C305
UNIVERSITY CODE	23EC3T02	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C305.1	Classify different number systems and apply to generate various codes.					
C305.2	Apply the concepts of Boolean algebra in minimization of switching functions					
C305.3	Design different types of combinational logic circuits.					
C305.4	Analyze the different types of flip-flops in designing of Registers and Counters					
C305.5	Design methodology for synchronous sequential circuits and algorithmic state machines					

COURSE NAME	Electronic Devices and Circuits lab			COURSE CODE		C306
UNIVERSITY CODE	23EC3L01	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C306.1	Measure voltage, frequency and phase of any waveform using CRO.					

C306.2	Generate sine, square and triangular waveforms with required frequency and amplitude using function generator.
C306.3	Analyse the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers, amplifiers etc.
C306.4	Design various amplifiers like CE, CC, CS amplifiers and implement.
C306.5	Analyze the concepts of SCR and observe its characteristics.

COURSE NAME	Switching Theory and Logic Design lab			COURSE CODE		C307
UNIVERSITY CODE	23EC3L02	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C307.1	Students able to Verify the truth tables of basic and universal logic gates using digital ICs					
C307.2	Student able to verify the minimal SOP Boolean expressions					
C307.3	Construct and test combinational circuits such as adders, subtractors, multiplexers, etc. Analyze					
C307.4	Design and verify sequential circuits like flip-flops, counters, and shift registers.. Analyze					
C307.5	Develop the basic combinational and Sequential circuit using Hardware Description Language					

COURSE NAME	Data structure using python			COURSE CODE		C308
UNIVERSITY CODE	23EC3L03	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C308.1	Apply the object-oriented programming concepts					
C308.2	Implement Python comprehension techniques and perform operations on data collections using Lists, Tuples, Sets, and Dictionaries.					
C308.3	Analyze and apply searching and sorting algorithms to structured data using Python.					
C308.4	Design and implement stack and queue data structures using Python.					
C308.5	Demonstrate understanding of dynamic memory-based data structures like Linked Lists and Trees using Python					

COURSE NAME	Environmental Science			COURSE CODE		C309
UNIVERSITY CODE	R231230	YEAR/SEM	II/I	REGULATION		R23
CO.NO	Course Outcomes					
C309.1	Compare various renewable and non-renewable resources.					
C309.2	Compare bio-geo-chemical cycles and ecological pyramids					
C309.3	Identify causes of pollution and solid waste management and related preventive measures.					
C309.4	Identify different types of rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation					
C309.5	Identify the causes of population explosion, value education and welfare programmes					

COURSE NAME	MEFA			COURSE CODE		C401
UNIVERSITY CODE	23MC4T01	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C401.1	Understand concepts related to Managerial Economics, financial accounting and management.					
C401.2	Apply the Concept of Production cost and revenues for effective Business decision					
C401.3	Analyze how to invest capital and maximize returns					
C401.4	Apply the capital budgeting techniques					
C401.5	Develop the accounting statements and evaluate the financial performance of Business entity					

COURSE NAME	LCS			COURSE CODE		C402
UNIVERSITY CODE	R2321047	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C402.1	Analyze various models to represent linear time invariant systems					
C402.2	Apply the knowledge of engineering fundamentals in control systems, modelling the transfer function of any system					
C402.3	Interpret the LTI system performance in time and frequency Domains					
C402.4	Analyse the Transfer function model of linear control system and stability using various methods					
C402.5	Examine the state of a linear control system using state space representation					

COURSE NAME	EMWTL			COURSE CODE		C403
UNIVERSITY CODE	23ES4T02	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C403.1	Determine Electric field intensity using Coulomb's law and Gauss law.					
C403.2	Determine magnetic field intensity using Biot-Savarts Law and Ampere's Circuital Law.					
C403.3	Analyse the electromagnetic wave propagation in dielectric and conducting media					
C403.4	Examine the primary and secondary constants of different types of transmission lines					
C403.5	Estimate the input impedance, reflection coefficient, and VSWR of transmission lines using smith chart					

COURSE NAME	ECA			COURSE CODE		C404
UNIVERSITY CODE	23EC4T03	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C404.1	Analysis of small signal high frequency transistor amplifier using BJT and FET.					
C404.2	Analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT					
C404.3	Analyze the effect of negative feedback on Feedback amplifiers					
C404.4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept					
C404.5	Performance comparison of different power and tuned amplifiers.					

COURSE NAME	Analog Communication			COURSE CODE		C405
UNIVERSITY CODE	23EC4T01	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C405.1	Compare various Analog modulation and demodulation schemes and their spectral characteristics					
C405.2	Analyze noise characteristics of various analog modulation methods					
C405.3	Analyze various functional blocks of radio transmitters and receivers					
C405.4	Design simple analog systems for various modulation techniques					
C405.5	Performance comparison of different power and tuned amplifiers.					

COURSE NAME	signals and systems lab			COURSE CODE		C406
UNIVERSITY CODE	23EC4L01	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C406.1	Analyze the basic signal generation with it characteristics					
C406.2	Demonstrate the concepts of Correlation, Convolution and Power spectrum of random signals					

C406.3	Examine the output sequence for the given input sequence using Fourier transforms and Laplace transforms
C406.4	Use Z-transform to study system behavior and perform stability and frequency response analysis
C406.5	Develop skills to simulate and interpret the effects of under-sampling and aliasing in sampled systems

COURSE NAME	ECA lab			COURSE CODE		C407
UNIVERSITY CODE	23EC4L02	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C407.1	Design basic Amplifier circuit and measure its gain characteristics to implement various applications					
C407.2	Analyze different feedback amplifier circuits and its frequency response.					
C407.3	Design and analyze different Oscillator circuits and their frequency response					
C407.4	Compare various power Amplifier Circuits to determine the efficiency and load					
C407.5	Design a Tuned Amplifier Circuit for specific Bandwidth					

COURSE NAME	Soft skills			COURSE CODE		C408
UNIVERSITY CODE	23SH4L02	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C408.1	Understand the meaning and importance of soft skills and learn how to develop them.					
C408.2	Understand the significance of soft skills in the working environment for professional excellence					
C408.3	Application of soft skills to undergo the placement process with confidence and clarity					
C408.4	Formulate to face any situation in life and equip themselves to handle them effectively.					
C408.5	Understand and learn the importance of etiquette in both professional and personal lives.					

COURSE NAME	DT lab			COURSE CODE		C409
UNIVERSITY CODE	23SH4L01	YEAR/SEM	II/II	REGULATION		R23
CO.NO	Course Outcomes					
C409.1	Define the concepts related to design thinking.					
C409.2	Applying the concepts of Design Thinking and innovation.					
C409.3	Apply the design thinking techniques for solving problems in various sectors					
C409.4	Analyze to work in a multi disciplinary environment					
C409.5	Evaluate the value of creativity					