SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 534280

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

R19 SEMESTER-I

SEM	ID	NBA Course Code	Course Code	Course Title
1	1	C101	19MA1T01	Calculus and Linear Algebra
	2	C102	19BS1T01	Engineering Physics
	3	C103	19CS1T01	Problem Solving and Programming Using C
	4	C104	19ME1T01	Engineering Graphics
	5	C105	19CS1L02	IT Workshop
	6	C106	19BS1L01	Engineering Physics Lab
	7	C107	19CS1L01	C Programming Lab
	8	C108	19HS1L01	English Proficiency Lab

HOD

Swarnandhra College of Engineering & Technology ECE Dept., Seetharampuram

ACADEMIC YEAR: 2019-2020 SEMESTER: I REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19MA1T01	Calculus and Linear Algebra	1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications	K3
		2	Apply the functions of several variables which is useful in optimization	K3
		3	Acquire important tools of calculus in higher dimensions and will become familiar with double integral	K3
		4	Solve the multiple integrals and are apply for special functions.	K3
19BS1T01	Engineering Physics	1	Acquire the knowledge of basic crystal systems and determination of crystal structures.	K2
		2	Summarize the Magnetic and Dielectric Materials properties.	K2
		3	Illustrate the concept of Magnetic Induction and Super Conducting properties.	K2
		4	Interpret Pure &Doped Semiconductor materials for better utility.	K2
		5	Acquire the knowledge on Optical fibers and Optical properties of materials and their applications	K2
19CS1T01	Problem Solving and Programming Using C	1	Develop an algorithm/flowchart to find a solution for computational problem	K3
		2	Develop C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or bitwise operators	K3
		3	Develop a C program using arrays to divide a given computational problem into a number of modules	K3
		4	Apply pointers for array processing and parameter passing	K3
		5	Develop C programs with structure or union and files for storing the data to be processed.	K3

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ACADEMIC YEAR: 2019-2020 SEMESTER: I REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19BS1L01	Engineering Physics Lab	1	Apply the basic knowledge to know the frequency of a vibrator, hall coefficient.	K3
		2	Apply the knowledge to verify some of the properties of physical optics.	K3
		3	Develop skills to plot various characteristic curves and to calculate the physical properties of given materials.	K3
		4	Estimate some the properties of semiconducting materials.	K3
19CS1L01	C Programming Lab	1	Develop basic programs in C and design flowcharts in Raptor.	K3
		2	Apply Conditional and Iterative statements to solve the real time scenarios in C.	K3
		3	Implement the concept of Arrays and Modularity and Strings.	K3
		4	Apply the Dynamic Memory Allocation functions using pointers.	K3
		5	Develop programs using structures and Files.	K3
19HS1L01	English Proficiency Lab	1	Acquire the sounds of words for correct pronunciation.	K2
		2	Identify and learn accent of words for mastering language proficiency.	K3
		3	Distinguish the word pronunciation relating to accent and accuracy of English language.	K4
		4	Apply the words for ensuring the ability for correct pronunciation.	K3
		5	Summarize the influence of mother tongue on target language.	K2

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R19 SEMESTER-II

SEM	ID	NBA Course Code	Course Code	Course Title
2	1	C109	19MA2T03	Vector Calculus and Numerical Methods
	2	C110	19BS2T02	Engineering Chemistry
	3	C111	19CS2T02	Object Oriented Programming Using C++
	4	C112	19EE2T02	Electrical Networks
	5	C113	19HS2T01	English
	6	C114	19ME2L01	Engineering Workshop
	7	C115	19BS2L02	Engineering Chemistry Lab
	8	C116	19CS2L03	C++ Programming Lab
	9	C117	19HS2L02	English Communication Skills Lab

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ACADEMIC YEAR: 2019-2020 SEMESTER: II REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19MA2T03	Vector Calculus and Numerical Methods	1	Solve the differential equations related to various engineering fields	K3
		2	Identify solution methods of partial differential equations that model physical processes	K3
		3	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms	K3
		4	Solve integrate and ordinary differential equations by various numerical techniques.	K3
19BS2T02	Engineering Chemistry	1	Summarize the impurities present in raw water, problems associated and how to avoid them	K2
		2	List out the advantages of Polymers in daily life	K2
		3	Illustrate the theory of construction of battery and fuel cells and theories of corrosion and prevention methods.	K2
		4	Compare conventional and non-conventional energy sources and their advantages and disadvantages.	K2
		5	Interpret the usage of advanced materials in day to day life	K2
19HS2T01	English	1	Identify the parts of speech, root words and apply relative writing formats to prepare notes	K3
		2	Precise the ideas coherently in day to day life.	K2
		3	Identify the importance of correct usage of grammar	K3
		4	Illustrate the ideas effectively on various topics	K2
		5	Develop the reports and essays by using appropriate sentences	K3

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ACADEMIC YEAR: 2019-2020 SEMESTER: II REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19BS2L02	Engineering Chemistry Lab	1	Identify the concentration of given solution by different methods of chemical analysis	K3
		2	Analyze the water purity by checking hardness, DO and Acidity.	K4
		3	Estimate the Cu^{+2}, Fe^{+3}, Ca^{+2}, Mg^{+2} ions and Ascorbic acid present in given solution.	K4
		4	Identify the pour and cloud point of lubricants.	K3
		5	Classify the principles of conductometric and potentiometric titrations.	K2
19CS1L02	IT Workshop	1	Acquire complete knowledge of computer hardware.	K2
		2	Install basic computer engineering software.	K2
		3	Document a task through MS office.	K2
		4	Apply the usage of Google Tools and Email handling.	K3
		5	Make use of network troubleshooting.	K3
19HS2L02	English Communication Skills Lab	1	Identify the difference between impromptu and extempore.	K3
		2	Express hypothetical situations in different ways.	K2
		3	Outline the etiquettes of telephonic conversation and interviews.	K2
		4	Identify the need of the presentation skills to participate in various oral activities.	K3
		5	Apply preparatory techniques for Job interviews.	K3

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R19 SEMESTER-III

SEM	ID	NBA Course Code	Course Code	Course Title
3	1	C201	19MA3T07	Complex Variables and Random Process
	2	C202	19EC3T01	Electronic Circuits-I
	3	C203	19EC3T02	Digital Electronics
	4	C204	19EC3T03	Signals and Systems
	5	C205	19CS3T02	Data Structures
	6	C206	19EC3L01	Electronic Circuits-I Lab
	7	C207	19EC3L02	Digital Electronics Lab
	8	C208	19CS3L01	Data Structures Lab

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ACADEMIC YEAR: 2020-2021 SEMESTER: III REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC3T01	ELECTRONIC CIRCUITS-I	1	Demonstrate the characteristics of different semiconductor diodes and its applications.	K3
		2	Evaluate the characteristics of Transistors, FET and biasing.	K4
		3	Construct the wave shaping circuits of non sinusoidal signals.	K3
		4	Analyze and design the Multi vibrators using BJT	K4
19EC3T02	DIGITAL ELECTRONICS	1	Categorize the different types of number systems and Boolean algebra.	K4
		2	Evaluate the Boolean logic expressions using minimization techniques.	K4
		3	Construct the logic circuits of various combinational circuits.	K4
		4	Focus the behaviour of various sequential circuits.	K3
19EC3T03	SIGNALS AND SYSTEMS	1	Differentiate the signal fundamentals of various signals using physical parameters	K4
		2	Categorize the concept of Fourier series and Fourier transforms to determine the signal and system characteristics.	K4
		3	Demonstrate the concept of sampling theorem, convolution and correlation and also signal transmission through linear systems	K3
		4	Demonstrate the concept of ROC (Region Of Convergence) using Laplace and Z- Transforms to analyze the continuous and discrete time systems.	K3,K4

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ACADEMIC YEAR: 2020-2021 SEMESTER: III REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC3T04	ANALOG COMMUNICATION	1	Describe and analyze the modulation techniques like AM, DSB-SC, SSB, FM and various Pulse Analog Modulation techniques.	K3
		2	Explain and examine the concepts of various types of Pulse Digital and Digital modulation techniques.	K4
		3	Analyze and observe the working of radio transmitters and receivers in communication system	K3
		4	Understood the concept of information theory, various coding and decoding techniques	K4
19EC3L01	ELECTRONICS CIRCUITS - I LAB	1	Evaluate the diode, FET and transistor characteristics	K4
		2	Estimate the rectifier circuits using diodes and implement them using hardware	K3
		3	Construct various Linear and Non-Linear wave shaping circuits and implement them using hardware, also observe their responses for different input signals	K3
		4	Analyze the switching characteristics and generate non-sinusoidal waveforms using Transistor circuits.	K4
19EC3L02	DIGITAL ELECTRONICS LAB	1	Outline the characteristics of Universal logic gates.	K4
		2	Evaluate simple Boolean expressions using the theorems and to minimize the combinational functions.	K3
		3	Analyze combinational circuits like Adders, Subtractors, Encoders, Decoders etc.	K4
		4	Construct various types of sequential circuits like Flip-flops, counters and Registers.	K3

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R19 SEMESTER-IV

SEM	ID	NBA Course Code	Course Code	Course Title
4	1	C210	19EC4T01	Electronic Circuits - II
	2	C211	19EC4T02	Analog And Digital Communication
	3	C212	19EC4T03	Electromagnetic Waves and Transmission Lines
	4	C213	19EE4T02	Control Systems
	5	C214	19EE4T04	Electrical Engineering
	6	C215	19EC4L01	Electronics Circuits-II Lab
	7	C216	19EC4L02	Analog and Digital Communication Lab

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ACADEMIC YEAR: 2020-2021 SEMESTER: IV REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC4T01	ELECTRONIC CIRCUITS-II	1	Analyze the frequency response of single stage amplifiers and multistage amplifier using BJTs and FETs in different configurations.	K4
		2	Construct Hybrid- π Common Emitter transistor model. Compare and analyze the different types of feedback amplifiers and oscillator circuits.	K3
		3	Determine the efficiency of different types of power amplifiers. Analyze Second harmonic distortions, Higher order harmonic Distortion.	K3
		4	Analyze the Multi vibrators and time base generators.	K4
19EC4T02	ANALOG AND DIGITAL COMMUNICATION	1	Describe and analyze the modulation techniques like AM, DSB-SC, SSB, FM and various Pulse Analog Modulation techniques.	K3
		2	Explain and examine the concepts of various types of Pulse Digital and Digital modulation techniques.	K4
		3	Analyze and observe the working of radio transmitters and receivers in communication system.	K3
		4	Understood the concept of information theory, various coding and decoding techniques.	K4
19EC4T03	ELECTROMAGNETIC WAVES AND TRANSMISSION LINES	1	Outline the basics of electrostatic & electromagnetic.	K4
		2	Illustrate Maxwell equations and different postulates of EM fields, depending on the media.	K3
		3	Focus the behaviour of EM waves propagation in conducting and dielectric media.	K4
		4	Analyze the propagation problems of EM waves through transmission lines and its design.	K4

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ACADEMIC YEAR: 2020-2021 SEMESTER: IV REGULATION : R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC4L01	ELECTRONICS CIRCUITS-II LAB	1	Examine the single stage and multistage amplifier using BJTs and FETs.	K3
		2	Differentiate different types of feedback amplifiers, calculate the input resistance and output resistance of feedback amplifiers.	K4
		3	Categorize the wave forms of oscillator with different frequencies. Obtain the efficiency of the single stage power amplifiers.	K4
		4	Analyze the characteristics of Series Voltage Regulator and Shunt Voltage Regulator.	K4
19EC4L02	ANALOG AND DIGITAL COMMUNICATION LAB	1	Explain and analyze different analog and digital modulation techniques.	K3
		2	Demonstrate various modulation and demodulation devices.	K3
		3	Analyze the various types of modulated signals.	K4
		4	Describe digital data encoding and decoding techniques.	K3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

R19 SEMESTER-V

SEM	ID	NBA Course Code	Course Code	Course Title
5	1	C301	19EC5T01	Linear and Digital IC Applications
	2	C302	19EC5T02	Microprocessor and Microcontroller
	3	C303	19EC5T05	Elective-I
	5	C305	19EC5T03	Antennas and Wave Propagation
	6	C306	19EC5L01	Linear and Digital IC Applications Lab
	7	C307	19EC5L02	Microprocessor and Microcontroller Lab
	8	C308	19CS5L04	Java Programming Lab

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ACADEMIC YEAR: 2021-2022 SEMESTER: V REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC5T01	LINEAR AND DIGITAL IC APPLICATIONS	1	Demonstrate different applications based on operational amplifier.	K3
		2	Explain the applications of waveform generators based on operational amplifier and IC.	K4
		3	Design and implementation of Combinational circuits using digital ICs.	K3
		4	Design and implementation of Sequential circuits using digital ICs	K3
19EC5T02	MICROPROCESSOR AND MICROCONTROLLER	1	Demonstrate architecture, instructions and addressing modes of 8086 Microprocessor	K3
		2	Analyze 8086 interfacing with different peripherals and implement programs	K4
		3	Examine 8051 Microcontroller interfacing and implement programs	K3
		4	Sketch the architecture and applications of advanced processors	K3
19EC5T03	ANTENNAS AND WAVE PROPAGATION	1	Differentiate various types of antenna parameters	K4
		2	Calculate the fields radiated by various types of antennas.	K3
		3	Categorize different types of antenna arrays	K4
		4	Illustrate and identify the characteristics of radio wave propagation	K3

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ACADEMIC YEAR: 2021-2022 SEMESTER: V SEMESTER REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC5L01	Linear And Digital Ic Applications Lab	1	Illustrate various linear circuits using operational amplifiers	K3
		2	Demonstrate various combinational circuits and Sequential Circuits using Digital IC's	K3
		3	Describe and Implement different Circuits with different IC's	K4
		4	Research their knowledge on analog circuits & digital circuits	K3
19EC5L02	Microprocessor and Microcontroller Lab	1	Demonstrate architecture, instructions and addressing modes of 8086Microprocessor	K3
		2	Develop Assembly programs for various industrial requirements.	K3
		3	Analyze 8086 interfacing with different peripherals and implement programs	K3
		4	Design a minimum workable system with 8051Microcontroller	K4

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R19 SEMESTER-VI

SEM	ID	NBA Course Code	Course Code	Course Title
6	1	C310	19EC6T01	Digital Signal Processing
	2	C311	19EC6T02	VLSI Design
	3	C312	19BM6T01	Managerial Economics and Financial Analysis
	4	C313	19EC6T05	Elective-II
	6	C315	19EC6L02	VLSI Design Lab
	7	C316	19EC6L01	Digital Signal Processing Lab
	8	C317	19HS6L03	Advanced English Communication Skills Lab

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ACADEMIC YEAR: 2021-2022 SEMESTER: VI REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC6T01	DIGITAL SIGNAL PROCESSING	1	Analyze the Discrete system in Time and Frequency domain through its respective tools.	K3,K4
		2	Demonstrate about Fourier series, DFT and to solve the FFT using DIT & DIF algorithms.	K4
		3	Apply Z-transform and Discrete Fourier transform to analyze a digital system.	K3
		4	Analyze IIR and FIR digital filters for various applications.	K4
19EC6T02	VLSI DESIGN	1	Develop the VHDL program for digital circuits using different styles	K3
		2	Analyze the fabrication process and Electrical properties of MOS Circuits	K4
		3	Categorize the CMOS circuit design processes, scaling and testing of MOS circuits	K4
		4	Estimate the applications of different semiconductor ICs and digital devices	K4
19EC6T04	DIGITAL SYSTEM DESIGN	1	Develop the Combinational and Sequential logic circuit.	K3
		2	Evaluate the FSM and synchronous state machines.	K4
		3	Differentiate various logic families.	K4
		4	Construct the HDL Design flow of VLSI circuits	K3
19EC6E05	RADAR AND SATELLITE COMMUNICATION SYSTEM	1	Classify different concepts of radar system.	K4
		2	Estimate the operation and applicability of CW, MTI Radar and detection of Radar signals in noise.	K4
		3	Demonstrate the concept of satellite communications and orbital mechanics.	K3
		4	Categorise the different multiple access techniques used in Satellite Communication	K4

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ACADEMIC YEAR: 2021-2022 SEMESTER: VI REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC6E06	DIGITAL IMAGE PROCESSING	1	Distinguish the basic concepts of digital image processing, intensity transformations and spatial filtering	K4
		2	Apply image restoration and reconstruction process in the images	K3
		3	Differentiate the Multi-Resolution Processing And Image Compression	K4
		4	Understand the concepts of Morphological Image Processing, segmentation and color Image Processing	K3
19EC6L01	DIGITAL SIGNAL PROCESSING LAB	1	Apply the basics of MATLAB and C-languages for the development of various DSP applications.	K3
		2	Analyze the various applications by transforming the input sequence using FFT algorithm.	K4
		3	Design IIR and FIR digital filters and use them in different applications.	K3
		4	Develop various real time applications using digital signal processor such as TMS3206713/ TMS6712.	K3
19EC6L02	VLSI DESIGN LAB	1	Understand the fundamental concepts of hardware description language (HDL).	K4
		2	Work with the software such as Xilinx ISE and Mentor Graphics Tool for front end and back end design.	K4
		3	Design and simulate combinational and sequential digital circuits using VHDL language.	K4
		4	Develop different logic gates and logic cells using micro wind tool.	K3

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R19 SEMESTER-VII

SEM	ID	NBA Course Code	Course Code	Course Title
7	1	C401	19EC7T01	Microwave and Optical Communication
	2	C402	19EC7T02	Embedded System
	3	C403	19EC7T03	Elective – III
	4	C406	19EC7L01	Microwave and Optical Communication Lab
	5	C407	19EC7L02	Embedded System Lab
	6	C408	19EC7P01	Mini Project

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Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC7T01	MICROWAVE AND OPTICAL COMMUNICATIONS	1	Classify different types of modes in wave guides and characteristics.	K4
		2	Interpret different types of microwave devices and measurements.	K3
		3	Interpret different types of microwave devices and measurements.	K3
		4	Categorize the key features of optical fiber, and describe various types of optical fibers and coupling losses.	K4
19EC7T02	EMBEDDED SYSTEMS	1	Acquire a basic knowledge about fundamentals of Embedded Systems	K3
		2	Acquire a basic knowledge about various components used in Embedded systems	K4
		3	Understand about the PIC, AVR controllers and Processors	K4
		4	Perform the design case study of Embedded Systems	K3
19EC7E07	ASIC DESIGN	1	Analyze the operations of ASICs and various logic cells	K4
		2	Compare the different programmable ASIC architectures	K4
		3	Apply Logic Synthesis in Placement and Routing	K3
		4	Categorize different types in System-on-Chip (SoC)	K4

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ACADEMIC YEAR: 2022-2023 SEMESTER: VII REGULATION:R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC7E10	SPEECH PROCESSING	1	Illustrate the speech production system and describe the time domain methods	K3
		2	Illustrate the speech production system and describe the time domain methods	K3
		3	Illustrate the speech production system and describe the time domain methods	K3
		4	Illustrate the speech production system and describe the time domain methods	K3
19EC7E09	SENSORS AND INSTRUMENTATION	1	Estimate the concepts of Electrical and Mechanical Transducers	K4
		2	Determine the measurement and characteristics of various instruments	K3
		3	Conclude the knowledge about basic Signal Conditioning Elements	K4
		4	Estimate about the feedback in Instruments	K4
19EC7E08	CELLULAR AND MOBILE COMMUNICATION	1	Design Hexagonal shaped cells and how these are implemented in real world.	K3
		2	Explain different types of antenna systems in mobile communication.	K4
		3	Analyze Handoffs and different types of handoffs and Dropped call rates and their evaluation.	K3
		4	Describe the Parameters of Mobile multipath channels, Types of small scale scale fading.	K4

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ACADEMIC YEAR: 2022-2023 SEMESTER: VII REGULATION:R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC7L01	MICROWAVE AND OPTICAL COMMUNICATIONS LAB	1	Discriminate different types of wave guide modes and characteristics	K4
		2	Interpret different types of components which are using in microwave communication.	K3
		3	Evaluate the operation of different optical fiber components	K4
		4	Demonstrate the various losses in optical fibres	K3
19EC7L02	EMBEDDED SYSTEMS LAB	1	Demonstrate the basic concepts in the embedded computing systems area	K3
		2	Determine the optimal composition and characteristics of an embedded system	K3
		3	Determine the optimal composition and characteristics of an embedded system	K3
		4	Develop hardware-software complex with the use of the Arduino, CPLD, and FPGA	K3
19EC7P01	Mini Project	1	Implement their technical ideas in their respective field	K3
		2	Simulate and develop the prototypes for their projects	K4
		3	Satisfy the industrial needs through their projects	K4
		4	Get placed in core components in their respective area	K3

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ACADEMIC YEAR: 2022-2023 SEMESTER: VII REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC7I01	Internship	1	Gain the practical knowledge in their respective field	K4
		2	Simulate and develop the prototypes for their projects	K4
		3	Satisfy the industrial needs through their projects	K4
		4	Get placed in core components in their respective area	K4

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R19 SEMESTER-VIII

SEM	ID	NBA Course Code	Course Code	Course Title
8	1	C410	19EC8T01	Elective – IV
	2	C411	19EC8T02	Elective –V
	3	C412	19EC8P01	Project Work

HOD

Swarnandhra College of Engineering & Technology * Seetharampuram * ECE Dept.,

SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 534280

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR: 2022-2023 SEMESTER: VIII SEMESTER REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC8E12	GLOBAL POSITIONING AND NAVIGATION SYSTEMS	1	Demonstrate the various global navigation satellite systems	K3
		2	Categorise GNSS Satellite signal characteristics	K4
		3	Develop GNSS Receiver and estimate receiver characteristics	K3
		4	Analyze the impact of various error sources on the precision of positioning	K4
19EC8E13	VIDEO PROCESSING	1	Categorize the characteristics of Video Raster.	K4
		2	Compare different types of Spatial Frequency Response and Spatio-temporal Frequency Response.	K4
		3	Demonstrate the characteristics of Sampling Video in Two Dimensions.	K3
		4	Analyse the different operations in video processing	K4
19EC8E14	DIGITAL DESIGN USING HDL	1	Outline the basics of HDL Programming basics and different tools used in developing HDL Programs (K4)	K4
		2	Demonstrate the gate level and behavioural modelling (K3)	K3
		3	Categorize any digital circuit using both concurrent and Sequential Programming concepts (K4)	K4
		4	Estimate the various Testing techniques used in testing digital circuits (K4)	K4

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Swarnandhra College of Engineering & Technology ECE Dept., Seetharampuram

ACADEMIC YEAR: 2022-2023 SEMESTER: VIII SEMESTER REGULATION: R19

Course Code	Course Name	CO No	CO Statement	Knowledge Level
19EC8E15	WIRELESS COMMUNICATION	1	Describe the functioning of various example wireless communication systems, their evolution and standards.	K1
		2	Construct on cellular communication system, architecture, functioning, various standards.	K3
		3	Demonstrate an understanding on signal propagation in cellular environment and to explain wireless communication networks.	K2
		4	Understand the functioning, protocols, capabilities and application of various wireless communication networks.	K2
19EC8E16	TELEVISION SYSTEMS AND DESIGN	1	Categorize the TV components based on their operations(K4)	K4
		2	Demonstrate the working of Monochrome Television Transmitter and Receiver systems	K3
		3	Compare various Color Television systems with a greater emphasis on PAL systems	K4
		4	Interpret the advanced topics in Television systems and Video Engineering.	K3

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