	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram		
	<u>Course outcome statement</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	II-I	Regulation	R20

Course Name: Electronic Devices and Circuits

Course code: R20C4211

After completing this course student will be able to:

C211	COURSE OUTCOMES	Taxonomy#
C211.1	Apply the basic concepts Hall effect and continuity equation of semiconductor physics.	Apply
C211.2	Analyze the characteristics of the semiconductor devices for real time applications.	Analyze
C211.3	Describe the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons.	Create
C211.4	Explain the basic geometry, operation and various configuration of Bipolar Junction Transistor.	Understand
C211.5	Analyse the various biasing techniques for BJT, and JFET amplifier circuits considering stability condition for establishing a proper operating point.	Analyze
C211.6	Analyses the BJT, and JFET amplifiers.	Analyze

Course Name: Switching Theory and Logic Design

Course code: R20C4212

After completing this course student will be able to:

C212	COURSE OUTCOMES	Taxonomy#
C212.1	Classify different number systems and apply to generate various codes.	Understand
C212.2	Use the concept of Boolean algebra in minimization of switching functions	Analyze
C212.3	Design different types of combinational logic circuits.	Create
C212.4	Apply knowledge of flip-flops in designing of Registers and counters	Apply
C212.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.	Analyze

Course Name: Signals and Systems**Course Code: R20C4213**

After completing this course student will be able to:

C213	COURSE OUTCOMES	Taxonomy#
C213.1	Characterize the signals and systems and principles of vector spaces, Concept of orthogonality	Understand
C213.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform	Analyze
C213.3	Apply sampling theorem to convert continuous-time signal to discrete-time signal and reconstruct back.	Apply
C213.4	Understand the relationships among the various representations of LTI system	Analyze
C213.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships. And Apply z-transform to analyze discrete-time signals and systems	Apply

Course Name: MATHEMATICS-III**Course Code: R20C4214**

After completing this course student will be able to:

C214	COURSE OUTCOMES	Taxonomy#
C214.1	Interpret the physical meaning of different operators such as gradient, curl and divergence	Understand
C214.2	Estimate the work done against a field, circulation and flux using vector calculus	Apply
C214.3	Apply the Laplace transform for solving differential equations	Apply
C214.4	Find or compute the Fourier series of periodic signals	Analyze
C214.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to arrange of non-periodic wave forms	Apply
C214.6	Identify solution methods for partial differential equations that model physical processes	Analyze

Course Name: Random Variables and Stochastic Processes

Course Code: R20C4215

After completing this course student will be able to:

C215	COURSE OUTCOMES	Taxonomy#
C215.1	Mathematically model the random phenomena and solve simple probabilistic problems.	Understand
C215.2	Identify different types of random variables and compute statistical averages of these random variables	Analyze
C215.3	Characterize the random processes in the time and frequency domains.	Apply
C215.4	Analyze the LTI systems with random inputs.	Analyze
C215.5	Apply these techniques to analyze the systems in the presence of different types of noise	Apply

Course Name: OOPS THROUGH JAVA LAB

Course Code: R20C4216

After completing this course student will be able to:

C216	COURSE OUTCOMES	Taxonomy#
C216.1	Identify classes, objects, members of a class and the relationship among them needed for a specific problem	Understand
C216.2	Implement programs to distinguish different forms of inheritance	Analyze
C216.3	Create packages and to reuse them	Create
C216.4	Develop programs using Exception Handling mechanism	Apply
C216.5	Develop multi-threaded application using synchronization concept	Apply
C216.6	Design GUI based applications using Swings and AWT.	Create

Course Name: Electronic Devices and Circuits - Lab**Course Code: R20C4217**

After completing this course student will be able to:

C217	COURSE OUTCOMES	Taxonomy#
C217.1	Students should be able to analyze and interpret the characteristics of semiconductor devices.	Analyze
C217.2	Student should be able to construct the voltage regulator using Zener diode.	Create
C217.3	Student should be able to interpret the working of rectifiers.	Apply
C217.4	Student should be able to demonstrate measurements of voltage, frequency and phase by using CRO.	Apply
C217.5	Students should be able to Calculate the operating point and stability factor for a transistor.	Apply
C217.6	Student should be able to set up the amplifier by BJT and FET with different configurations.	Create

Course Name: Switching Theory and Logic Design – Lab**Course Code: R20C4218**

After completing this course student will be able to:

C218	COURSE OUTCOMES	Taxonomy#
C218.1	Define the digital trainer Kit and associated equipment.	Understand
C218.2	Understand the operations of different logic gates.	Apply
C218.3	Analysis the working of Half adders and full Adders.	Analyze
C218.4	Examine the behavior of sequential circuits, multiplexers & de-multiplexers using digital IC's.	Apply
C218.5	Design of BCD to seven segment displays.	Create
C218.6	Designing of various types of sequential circuits like flip flops, registers.	Create


Course Name: Python Lab (Skill Oriented Course)

Course Code: R20C4219

After completing this course student will be able to:

C219	COURSE OUTCOMES	Taxonomy#
C219.1	Know comprehensions, generators in python	Understand
C219.2	Know exception handling in python	Apply
C219.3	Know file I/O	Apply
C219.4	Understand various data types like lists, tuples, strings etc.	Apply
C219.5	Know the usage of various pre-defined functions on the above datatypes	Apply

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	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram		
	<u>Course outcomes statement</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	III/I	Regulation	R19

Course Name: Linear and Digital IC applications

Course Code: R19C4311

After completing this course student will be able to:

C311	COURSE OUTCOMES	Taxonomy#
C311.1	Design circuits using operational amplifiers for various applications.	Create
C311.2	Analyze and design waveform generators and active filters using Op-amp	Analyze
C311.3	Design circuits for various A/D and D/A converters	Create
C311.4	Understand the VHDL program structure	Understand
C311.5	Design and implement behavioral modelling of sequential and combinational Circuits	Create

Course Name: Microprocessors and Microcontrollers

Course Code: R19C4312

After completing this course student will be able to:

C312	COURSE OUTCOMES	Taxonomy#
C312.1	Develop the assembly language programs for different addressing modes	Understand
C312.2	Perform 8086 interfacing with different peripherals and implement programs	Apply
C312.3	Describe the key features serial and parallel communication.	Apply
C312.4	Design Microcontroller for simple Applications.	create
C312.5	Distinguish between architectures of various processors and controllers.	Analyze

Course Name: Digital Communications

Course Code: R19C4313

After completing this course student will be able to:

C313	COURSE OUTCOMES	Taxonomy#
C313.1	Determine the performance of different waveform coding techniques	Understand
C313.2	Generate the digital representation of the signals.	Apply
C313.3	Determine the probability of error for various digital modulation schemes	Analyze
C313.4	Analyze the prosperities viz., mutual information, entropy information rate, average information	Analyze
C313.5	Calculate different parameters of source coding techniques	Apply

Course Name: Antenna and Wave Propagation

Course Code: R19C4314

After completing this course student will be able to:

C314	COURSE OUTCOMES	Taxonomy#
C314.1	Identify basic antenna parameters.	Understand
C314.2	Quantify the fields radiated by various types of antennas	Analyze
C314.3	Design and analyze antenna arrays and loop antennas.	Analyze
C314.4	Design and analyze wire antennas, reflector antennas, lens antennas, horn antennas, micro strip antennas and antenna measurements to assess antenna's performance.	Create
C314.5	Identify the characteristics of radio wave propagation	Analyze

Course Name: Digital system design using HDL**Course Code: R19C4315**

After completing this course student will be able to:

C315	COURSE OUTCOMES	Taxonomy#
C315.1	Infer the architecture of FPGAs, tools used in modeling of digital design.	Understand
C315.2	Analyze the basic digital circuits with combinatorial and sequential logic circuits using Verilog HDL	Analyze
C315.3	Model complex digital systems at several levels of abstractions.	Apply
C315.4	Utilize the FPGA Building Blocks in data storage elements.	Analyze
C315.5	Interpret the digital interfacing.	Analyze

Course Name: Electronic Measurements and Instrumentation**Course Code: R19C4316**

After completing this course student will be able to:

C316	COURSE OUTCOMES	Taxonomy#
C316.1	Analyze the Performance characteristics of each instrument.	Analyze
C316.2	Demonstrate basic meters such as voltmeters and ammeters.	Analyze
C316.3	Understand about different types of signal generators and recorders.	Understand
C316.4	Illustrate the basic concepts of CRO and its usage for the measurement of various parameters.	Analyze
C316.5	Analyze the circuits for the measurement of Resistance, Capacitance, Inductance, and Frequency.	Analyze
C316.6	Apply the complete knowledge of various electronics instruments/transducers to measure the physical quantities in the field of science, engineering and technology	Apply

Course Name: Linear and Digital IC Applications Lab

Course Code: R19C4317

After completing this course student will be able to:

C317	COURSE OUTCOMES	Taxonomy#
C317.1	Design circuits using operational amplifiers for various applications	Create
C317.2	Analyze and design waveform generators and active filters using Op-amp.	Analyze
C317.3	Design circuits for various applications of ICs	Create
C317.4	Design and implement HDL program structure of combinational circuits	Create
C317.5	Design and implement behavioral modelling of sequential circuits.	Create

Course Name: Digital Communications Lab

Course Code: R19C4318

After completing this course student will be able to:

C318	COURSE OUTCOMES	Taxonomy#
C318.1	Examine and analyze pulse analog and pulse digital modulated signals.	Analyze
C318.2	Observe and analyze Digital modulated signals.	Analyze
C318.3	Construct TDM signal for given analog signal	Create
C318.4	Analyze the performance of source and channel coding techniques	Analyze
C318.5	Apply linear block codes and convolution codes and Companding technique for compressing and then expanding (or decompressing) an analog or digital signal	Apply

Course Name: Micro Processors & Micro Controllers Lab**Course Code: R19C4319**

After completing this course student will be able to:


C319	COURSE OUTCOMES	Taxonomy#
C319.1	Debug assembly language programs using 8086 assemblers.	Understand
C319.2	Analyze the interfacing between external peripherals and 8086 microprocessor using development kit.	Analyze
C319.3	Debug 8051 assembly language programs using Kiel IDE.	Apply
C319.4	Analyze the interfacing between external peripherals and 8051 microcontroller using development kit	Analyze
C319.5	Contrast how different I/O devices can be interfaced to processor and will explore several techniques of interfacing	Apply
C319.6	Primarily via team-based laboratory activities, students will demonstrate the ability to interact effectively on a social and interpersonal level with fellow students, and will demonstrate the ability to divide up and share task responsibilities to complete assignments.	Create

Course Name: Seminar**Course Code: R19C43110**

After completing this course student will be able to

C3110	COURSE OUTCOMES	Taxonomy#
C3110.1	Identify emerging topic specific to the program.	Understand
C3110.2	Organize a detailed literature survey and build a document with respect to technical publications.	Analyze
C3110.3	Extract the information relevant to the chosen topic.	Apply
C3110.4	Express the knowledge using multimedia.	Apply
C3110.5	Analyze a current topic of professional interest	Analyze
C3110.6	Compile an effective technical report, providing conclusions and proposing an appropriate future scope.	Create

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	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram		
	<u>Course outcomes statement</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	IV/I	Regulation	R16

Course Name: Radar Systems

Course Code: R16C441

After completing this course student will be able to:

C411	COURSE OUTCOMES	Taxonomy#
C411.1	Analyze the performance of Radar System and its parameters.	Analyze
C411.2	Analyze the functionality of CW and FMCW radar.	Analyze
C411.3	Classify the mechanism of detecting stationary and moving targets	Apply
C411.4	Compare the working mechanism of various tracking radars.	Apply
C411.5	Analyze the radar signal in noisy environment.	Analyze
C411.6	Assess various components and parameters of Radar receivers	Analyze

Course Name: Digital Image Processing

Course Code: R16 C4412

After completing this course student will be able to:

C412	COURSE OUTCOMES	Taxonomy#
C412.1	Able to familiarize with basic concepts of digital image processing and different image transforms.	Understand
C412.2	Able to learn various image processing techniques like image enhancement, restoration, segmentation and compression	Analyze
C412.3	Able to design an image restoration model and to justify its filtering techniques.	Create
C412.4	Able to analyze the images using wavelets and to discuss various compression models.	Analyze
C412.5	Able to estimate the objects using morphological operations and to use different algorithms for image segmentation.	Analyze
C412.6	Able to classify the color models and interpret the gray scale image concepts to color images.	Analyze

Course Name: Computer Networks

Course Code: R16C4413

After completing this course student will be able to:

C413	COURSE OUTCOMES	Taxonomy#
C41.1	Describe the different topologies, OSI and TCP/IP models	Understand
C413.2	Apply the Transmission Media and Modulation in Physical Layer	Analyze
C413.3	Identify the various Data Link layer design issues and protocols.	Apply
C413.4	Analyze MAC sub layer protocols and Ethernet	Analyze
C413.5	Select the appropriate algorithms and techniques for the efficient routing, addressing, congestion.	Apply
C413.6	Evaluate the importance of Transport and Application layer in the internetworking.	Analyze

Course Name: Optical Communications

Course Code: R16C4414

After completing this course student will be able to:

C414	COURSE OUTCOMES	Taxonomy#
C414.1	Illustrate the optical fiber communication along with types of optical fibers.	Understand
C414.2	Identify various losses and dispersion models.	Analyze
C414.3	apply splicing techniques on fibers	Apply
C414.4	Analyze different types of Optical sources, photo detectors for optical test equipment.	Analyze
C414.5	Evaluate the power coupled in to optical fibers.	Analyze
C414.6	Design optical system with budget analysis.	Create

Course Name: Electronic Switching Systems**Course Code: R16C4415**

After completing this course student will be able to:

C415	COURSE OUTCOMES	Taxonomy#
C415.1	Evaluate the time and space parameters of a switched signal.	Understand
C415.2	Develop the digital signal path in time and space, between two terminals.	Create
C415.3	Evaluate the inherent facilities within the system to test some of the SLIC, CODEC and digital switch functions.	Apply
C415.4	Illustrate the traffic capacity of the Electronic switching systems.	Apply
C415.5	Examine methods of collecting traffic data.	Analyze
C415.6	Compare the method of interconnecting two separate digital switches.	Analyze

Course Name: Embedded Systems**Course Code: R16C4416**

After completing this course student will be able to:

C416	COURSE OUTCOMES	Taxonomy#
C416.1	Understand the concept of Embedded System, microcontroller, different components of microcontroller and their concepts.	Understand
C416.2	Understand the key concept of Embedded Systems such as I/O, timers, interrupts and interaction with peripheral devices.	Analyze
C416.3	To understand the selection procedures of Processors in Embedded domain.	Apply
C416.4	Design procedures for Embedded Firmware.	Apply
C416.5	To visualize the role of Real Time Operating systems in Embedded Systems.	Analyze
C416.6	To evaluate the Correlation between task synchronization and latency issues.	Analyze

Course Name: Micro Wave Engineering & Optical Lab**Course Code: R16C4417**

After completing this course student will be able to:


C417	COURSE OUTCOMES	Taxonomy#
C417.1	Analyze the characteristics of microwave sources and devices.	Analyze
C417.2	Measure different parameters of various microwave devices.	Apply
C417.3	Measure the Scattering Parameters of various Tee Junctions	Apply
C417.4	Measure the Antenna Patterns	Apply
C417.5	Demonstrate characteristics of various optical sources.	Analyze
C417.6	Measure data Rate, Numerical Aperture and Losses in Optical Link.	Analyze

Course Name: Digital Signal Processing Lab**Course Code: R16C4418**

After completing this course student will be able to:

C418	COURSE OUTCOMES	Taxonomy#
C418.1	Generation of sinusoidal and noise waveform using different approaches	Apply
C418.2	Analyze Impulse and frequency response of various digital filters.	Analyze
C418.3	Implement different algorithms of DSP through simulation.	Create
C418.4	Implement various DSP algorithms in hardware.	Create
C418.5	Design and Analyze Digital Filters using FDA Tool.	Analyze
C418.6	Analyze and Observe Magnitude and phase characteristics (Frequency response Characteristics) of digital FIR filter using window techniques.	Analyze

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	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram		
	<u>Course outcome statement</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	II/II	Regulation	R20

Course Name: Electronic Circuit Analysis

Course Code: R20C4221

After completing this course student will be able to:

C221	COURSE OUTCOMES	Taxonomy[#]
C221.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.	Create
C221.2	Design and analysis of multi stage amplifiers using BJT and FET and Differential amplifier using BJT.	Create
C221.3	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept.	Analyze
C221.4	Know the classification of the power amplifiers and their analysis with performance comparison	Apply
C221.5	Know the classification of the tuned amplifiers and their analysis with performance comparison	Apply

Course Name: Digital IC Design

Course Code: R20C4222

After completing this course student will be able to:

C222	COURSE OUTCOMES	Taxonomy[#]
C222.1	Understand the structure of commercially available digital integrated circuit families	Understand
C222.2	Learn the IEEE Standard 1076 Hardware Description Language (VHDL).	Apply
C222.3	Model complex digital systems at several levels of abstractions, behavioural, structural, simulation, synthesis and rapid system prototyping.	Create
C222.4	Analyze and design basic digital circuits with combinatorial logic circuits using VHDL.	Analyze
C222.5	Analyze and design basic digital circuits with sequential logic circuits using VHDL	Analyze

Course Name: Analog Communications**Course Code: R20C4223**

After completing this course student will be able to:

C223	COURSE OUTCOMES	Taxonomy#
C223.1	Explain the basic elements of communication system, need for modulation and elaborately about amplitude modulation.	Understand
C223.2	Describe the time and frequency domain representation, generation and demodulation of DSBSC, SSB and VSB modulation schemes.	Create
C223.3	Discuss the concepts of angle modulation.	Analyze
C223.4	Explain various issues in radio transmitters and receivers	Analyze
C223.5	Describe pulse modulation schemes and estimate the noise in analog modulation schemes	Analyze

Course Name: Linear Control Systems**Course Code: R20C4224**

After completing this course student will be able to:

C224	COURSE OUTCOMES	Taxonomy#
C224.1	Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.	Analyze
C224.2	Determine time response specifications of second order systems and error constants.	Apply
C224.3	Analyze the absolute and relative stability of LTI systems using Routh's stability criterion and the Root locus method.	Analyze
C224.4	Analyze the stability of LTI systems using frequency response methods.	Analyze
C224.5	Design the Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.	Create
C224.6	Determine the response of physical systems as state models and Understanding the concepts of controllability and Observability	Analyze

Course Name: Management and Organizational Behavior
Course Code: R20C4225

After completing this course student will be able to:

C225	COURSE OUTCOMES	Taxonomy#
C225.1	To summarize the knowledge on management functions, global leadership and organizational structure.	Understand
C225.2	To understand the concepts of functional management that is HRM and Marketing of new product developments.	Understand
C225.3	To demonstrate a clear understanding of the concepts, tools & techniques used by executives in developing and executing strategies and will appreciate its integrative and interdisciplinary nature.	Analyze
C225.4	Demonstrate the applicability of the concept of organizational behavior to understand the behavior of people in the organization.	Apply
C225.5	To understand the conceptual framework of the discipline of OB and its practical applications in the organizational set up.	Apply
C225.6	Analyze the complexities associated with management of the group behavior in the organization.	Analyze

Course Name: Electronic Circuit Analysis – Lab
Course Code: R20C4226

After completing this course student will be able to:

C226	COURSE OUTCOMES	Taxonomy#
C226.1	Design, simulate and verify basic amplifier circuits.	Create
C226.2	Design, simulate and verify feedback amplifiers and oscillators	Create
C226.3	Design, simulate and verify power amplifier circuits.	Create
C226.4	Design, simulate and verify Multivibrators and Sweep Circuits.	Create
C226.5	Design different types of Amplifier and Oscillator circuits	Create
C226.6	Test different types of Amplifiers and Oscillator circuits using hardware	Analyze

Course Name: Analog Communications – Lab
Course Code: R20C4227

After completing this course student will be able to:

C227	COURSE OUTCOMES	Taxonomy#
C227.1	Examine the modulation and demodulation techniques using hardware and software	Apply
C227.2	Estimate the variations of amplitude and frequency for a reconstructed signal by using Sampling theorem using hardware and software	Analyze
C227.3	Distinguish the Pre-emphasis & De-emphasis techniques for transmitting signals in the communication system.	Create
C227.4	Examine the mixer characteristics of super heterodyne receiver to verify the characteristics of automatic gain control unit	Analyze
C227.5	Make use of phase locked loop to verify the operation of frequency synthesizer using hardware and software.	Create
C227.6	Experiment with the spectrum analyzer to calculate the bandwidth of AM and FM waveforms from their frequency spectrum.	Create

Course Name: Digital IC Design Lab

Course Code: R20C4228

After completing this course student will be able to:

C228	COURSE OUTCOMES	Taxonomy#
C228.1	Design various logic gates and Universal gates using VHDL.	Create
C228.2	Understand various modeling styles to impact on final gate level circuit.	Understand
C228.3	Design various combinational circuits for given specifications	Create
C228.4	Design various sequential circuits for given specifications	Create
C228.5	Design the counters to meet required specifications	Create
C228.6	Test the functionality of digital design by implementing it on FPGA boards.	Analyze


Course Name: SOFTSKILLS(SKILLORIENTEDCOURSE)

Course Code: R20C4229

After completing this course student will be able to:

C229	COURSE OUTCOMES	Taxonomy[#]
C229.1	Use language fluently, accurately and appropriately.	Apply
C229.2	Use their skills of listening comprehension to communicate effectively in cross-cultural contexts.	Apply
C229.3	Learn and use new vocabulary	Apply
C229.4	Write resumes, project reports and reviews	Create
C229.5	Exhibit interview skills and develop soft skills.	Create

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	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram <u>Course Outcomes Statements</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	III/II	Regulation	R19

Course Name: Micro Wave Engineering
Course Code: R19C4321

After completing this course student will be able to:

C321	COURSE OUTCOMES	Taxonomy#
C321.1	Design different modes in waveguide structures	Create
C321.2	Calculate S-matrix for various waveguide components and splitting the microwave energy in a desired direction	Understand
C321.3	Distinguish between Microwave tubes and calculation of efficiency of devices.	Create
C321.4	Apply the principle of operation and features of Solid-State Devices	Understand
C321.5	Measure various microwave parameters using a Microwave test bench	Create

Course Name: VLSI Design
Course Code: R19C4322

After completing this course student will be able to:

C322	COURSE OUTCOMES	Taxonomy#
C322.1	Understand the properties of MOS active devices and simple circuits configured when using them and the reason for such encumbrances as ratio rules by which circuits can be interconnected in silicon.	Understand
C322.2	Know three sets of design rules with which nMOS and CMOS designs may be fabricated.	Apply
C322.3	Understand the scaling factors determining the characteristics and performance of MOS circuits in silicon technology.	Apply
C322.4	Know about scaling of MOS circuits	Analyze
C322.5	Know about FPGA design, synthesis and different case studies	Analyze

Course Name: Digital Signal Processing**Course Code: R19C4323**

After completing this course student will be able to:

C323	COURSE OUTCOMES	Taxonomy[#]
C323.1	Apply the difference equations concept on discrete-time systems.	Apply
C323.2	Compute DFT and IDFT using DIT and DIF radix-2 FFT algorithms.	Analyze
C323.3	Design a digital IIR filter from the given specifications.	Create
C323.4	Illustrate the various IIR filter structures for the realization of the given system function.	Apply
C323.5	Design a digital FIR filter from the given specifications.	Create

Course Name: Cellular and Mobile Communications**Course Code: R19C4324**

After completing this course student will be able to:

C324	COURSE OUTCOMES	Taxonomy[#]
C324.1	explain the fundamentals of cellular radio system design and its basic elements	understand
C324.2	analyse the concepts of different co-channel, non-co-channel interference and cellular coverage on signal & traffic of a designed system	Analyze
C324.3	identify the various types of antenna system design suitable for mobile communications.	Apply
C324.4	distinguish the number of radio channels, channel assignment and frequency management used in mobile communications and analyse the different hand off & cell splitting techniques and dropped call rate at cell site area.	Analyze
C324.5	summarize the different types of second, generation system architectures such as GSM, TDMA and CDMA for mobile communication systems	Create

Course Name: IOT Engineering**Course Code: R19C4325**

After completing this course student will be able to:

C325	COURSE OUTCOMES	Taxonomy#
C325.1	Summarize on the term 'internet of things' in different context	Understand
C325.2	Analyze various protocols for IoT.	Analyze
C325.3	Design a PoC of an IoT system using Raspberry Pi/Arduino	Create
C325.4	Apply data analytics and use cloud offerings related to IoT.	Apply
C325.5	Analyze applications of IoT in real time scenario	Analyze

Course Name: VLSI Lab**Course Code: R19C4326**

After completing this course student will be able to:

C326	COURSE OUTCOMES	Taxonomy#
C326.1	To distinguish the Basics of CMOS process technology.	Understand
C326.2	An ability to design CMOS logic circuits.	Apply
C326.3	To demonstrate & simulate circuits with a CAD tool.	Create
C326.4	To analyze the results of logic and timing simulations.	Analyze
C326.5	To Interpret how plot the output characteristics of a 3inverter ring oscillator	Create
C326.6	To Develop a simple differential amplifier & DAC	Create

Course Name: Digital Signal Processing Lab**Course Code: R19C4327**

After completing this course student will be able to:


C327	COURSE OUTCOMES	Taxonomy#
C327.1	Generation of sinusoidal and noise waveform using different approaches	Apply
C327.2	Analyze Impulse and frequency response of various digital filters.	Analyze
C327.3	Implement different algorithms of DSP through simulation.	Create
C327.4	Implement various DSP algorithms in hardware.	Create
C327.5	Design and Analyze Digital Filters using FDA Tool.	Create
C327.6	Analyze and Observe Magnitude and phase characteristics (Frequency response Characteristics) of digital FIR filter using window techniques.	Analyze

Course Name: Micro Wave Engineering & Optical Lab**Course Code: R19C4328**

After completing this course student will be able to:

C328	COURSE OUTCOMES	Taxonomy#
C328.1	Analyze the characteristics of microwave sources and devices.	Analyze
C328.2	Measure different parameters of various microwave devices.	Apply
C328.3	Measure the Scattering Parameters of various Tee Junctions	Apply
C328.4	Measure the Antenna Patterns	Apply
C328.5	Demonstrate characteristics of various optical sources.	Understand
C328.6	Measure data Rate, Numerical Aperture and Losses in Optical Link.	Create

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	DNR COLLEGE OF ENGINEERING & TECHNOLOGY, Bhimavaram		
	<u>Course outcomes statements</u>		
Program Name:	B.Tech. in Electronics & Communication Engineering	AY	2021-22
Class/SEM	IV/II	Regulation	R16

Course Name: Cellular Mobile Communications

Course Code: R16C4421

After completing this course student will be able to:

C421	COURSE OUTCOMES	Taxonomy[#]
C421.1	Discuss cellular radio concepts	Understand
C421.2	Identify various propagation effects	Analyze
C421.3	Illustrate the mobile system specifications	Apply
C421.4	Classify multiple access techniques in mobile communication	Analyze
C421.5	Outline cellular mobile communication standards	Apply
C421.6	Analyze various methodologies to improve the cellular capacity	Analyze

Course Name: Electronic Measurements and Instrumentation

Course Code: R16C4422

After completing this course student will be able to:

C422	COURSE OUTCOMES	Taxonomy[#]
C422.1	Analyze the Performance characteristics of each instrument.	Analyze
C422.2	Demonstrate basic meters such as voltmeters and ammeters.	Understand
C422.3	Understand about different types of signal generators and recorders.	Apply
C422.4	Illustrate the basic concepts of CRO and its usage for the measurement of various parameters.	Analyze
C422.5	Analyze the circuits for the measurement of Resistance, Capacitance, Inductance, and Frequency.	Analyze
C422.6	Apply the complete knowledge of various electronics instruments/transducers to measure the physical quantities in the field of science, engineering and technology	Evaluate

Course Name: Satellite Communications**Course Code: R16C4423**

After completing this course student will be able to:

C423	COURSE OUTCOMES	Taxonomy[#]
C423.1	Recognize the concepts, applications and subsystems of Satellite communications.	Understand
C423.2	Demonstrate the satellite antenna Equipment reliability and space qualification.	Analyze
C423.3	Illustrate the expression for G/T ratio and to solve some analytical problems on satellite link design.	Analyze
C423.4	Categorize the various types of multiple access techniques and architecture of earth station design.	Apply
C423.5	Analyze the transmitter and receiver block diagrams of an earth station and explain its working.	Analyze
C423.6	Classify the concepts of GPS and its architecture.	Analyze

Course Name: Wireless sensors & Networks**Course Code: R16C4424**

After completing this course student will be able to:

C424	COURSE OUTCOMES	Taxonomy[#]
C424.1	Understand and explain wireless sensor node architectures and applications of Wireless Sensor Networks.	Understand
C424.2	Analyze the architecture of a single node and Wireless Sensor Network.	Analyze
C424.3	Evaluate different MAC protocols of wireless sensor networks in real time applications.	Evaluate
C424.4	Demonstrate knowledge of routing protocols developed for WSN.	Apply
C424.5	Design infrastructure establishment of wireless sensor networks.	Create
C424.6	Apply the knowledge of sensor network platforms and tools for the development of wireless sensor networks.	Apply

Course Name: Seminar
Course Code: R16C4425

After completing this course student will be able to:

C425	COURSE OUTCOMES	Taxonomy#
C425.1	Identify emerging topic specific to the program.	Understand
C425.2	Organize a detailed literature survey and build a document with respect to technical publications.	Analyze
C425.3	Extract the information relevant to the chosen topic.	Apply
C425.4	Express the knowledge using multimedia.	Apply
C425.5	Analyze a current topic of professional interest	Analyze
C425.6	Compile an effective technical report, providing conclusions and proposing an appropriate future scope.	Create

Course Name: Project
Course Code: R16C4426

After completing this course student will be able to:

C426	COURSE OUTCOMES	Taxonomy#
C426.1	Identify right problem and come with abstract for it.	Understand
C426.2	Building a solution after literature survey and come out with a prospective or latest happening related to problem.	Apply
C426.3	Identify the various resources for select components required to complete project.	Analyse
C426.4	Solve the problem by creating a working model implementation	Create
C426.5	Justify his work progress to a panel of experts by preparing Power Point Presentation and written report.	Create
C426.6	Experiment and take observations, analyze and conclude the results.	Analyse
C426.7	Develop a module using some syntax of a code	Apply
C426.8	Fabricate a working model	Create
C426.9	Apply software and solve the problem	Apply
C426.10	Prepare a thesis as per given guide lines by the university for a specific technical project.	Apply
C426.11	Find out how can do the work to complete the project with in time.	Apply
C426.12	Express their contribution towards the project as a team member among others students and as individual to submit the report.	Evaluate

Signature HOD