



ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)

KESANUPALLI (V), NARASARAOPETA-522549, AP

www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

Department of Electronics and Communication Engineering

Course Outcomes

A.Y:2023-2024

Regulation R20

Year/Sem: II B.Tech I SEM

Course Name: Electronic Devices and Circuits	
Course Code: EC2101	
EC2101.1	Apply the basic concepts of semiconductor physics.
EC2101.2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
EC2101.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
EC2101.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
EC2101.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
EC2101.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations

Course Name: Switching Theory and Logic Design	
Course Code: EC2102	
EC2102.1	Classify different number systems and apply to generate various codes
EC2102.2	Use the concept of Boolean algebra in minimization of switching functions
EC2102.3	Design different types of combinational logic circuits.
EC2102.4	Apply knowledge of flip-flops in designing of Registers and counters
EC2102.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
EC2102.6	Produce innovative designs by modifying the traditional design techniques.

Course Name: Signals and Systems	
Course Code: EC2103	
EC2103.1	Differentiate the classification of signals as well as systems operations on signals and signal approximation.
EC2103.2	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals using Fourier series
EC2103.3	Analyse the spectral characteristics of continuous-time periodic and aperiodic signals Using Fourier transform.
EC2103.4	Able to learn sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
EC2103.5	Define and evaluate the concept of convolution and filters such as LPF,HPF,BPF ,correlation functions.
EC2103.6	Apply laplace-transform to analyze continuous--time signals and systems and z-transform to analyze discrete-time signals and systems.



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Course Name: Mathematics-III (Transforms and Vector Calculus)	
Course Code: EC2104	
R2021011.1	State and prove vector Line, Surface and volume integral Theorems.State and prove Stokes and Green's theorems.
R2021011.2	Derive Laplace transform standard functions. Deduce inverse Laplace transform functions.
R2021011.3	Explain about Periodic functions , even and odd functions.Explain about Half range sine and cosine series. Explain Fourier transforms.State and prove Fourier integral theorem and problems.
R2021011.4	Explain Fourier Transforms. State and prove Fourier integral theorem and problems.
R2021011.5	Explain By eliminating Orbitaly constants and Orbitaly functions. Derive Legrangies equation and problems.
R2021011.6	Derive solutions of linear P.D.E with constant coefficientsand problems. Explain method of separation of variables and wave & heat equations.

Course Name: Random Variables and Stochastic Processes	
Course Code: EC2105	
EC2105.1	Able to Identify random variables and Define and manipulate distribution and densityfunctions.
EC2105.2	Able to Compute various operations like expectations, variances, etc. from probability density functions and probability distribution functions.
EC2105.3	Able to Characterize probability density and distribution function for multiple random variables
EC2105.4	Able to perform operations on Multiple random variables
EC2105.5	Explain the concept of random process, differentiate between stochastic and ergodic processes
EC2105.6	Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes, Analyze the LTI systems with random inputs and understand the concept of noise

Course Name: OOPS through Java Lab	
Course Code: EC2106	
EC2106.1	Identify classes, objects, members of a class and the relationship among them needed for as pacific problem
EC2106.2	Implement programs to distinguish different forms of inheritance
EC2106.3	Create packages and to reuse them
EC2106.4	Develop programs using Exception Handling mechanism
EC2106.5	Develop multithreaded application using synchronization concept
EC2106.6	Design GUI based applications using Swings and AWT.

Course Name: Electronic Devices and Circuits Lab	
Course Code: EC2107	
EC2107.1	Ability to analyze PN junctions in semiconductor devices under various conditions.
EC2107.2	Ability to analyzeZener in semiconductor devices under various conditions.
EC2107.3	Ability to design and analyze simple rectifiers and voltage regulators using diodes



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EC2107.4	Ability to design and analyze simple BJT and FET circuits.
EC2107.5	Know the CRO and CRO uses
EC2107.6	Ability to design and amplify the BJT and FET

Course Name: Switching Theory and Logic Design–Lab	
Course Code: EC2108	
EC2108.1	Test the operation of different logic gates using relevant IC's.
EC2108.2	Examine the operation of different combinational logic circuits.
EC2108.3	Apply the concept of Boolean algebra or k-maps to reduce and Construct logic circuit for given function
EC2108.4	Analyse the Truth tables of different Flip-Flops.
EC2108.5	Design of registers using sequential logic circuits.
EC2108.6	Design of Synchronous and Asynchronous counters using Flip-Flops

Course Name:Python Programming	
Course Code: EC2109	
EC2109.1	Know comprehensions in python
EC2109.2	Know generators in python
EC2109.3	Know exception handling in python
EC2109.4	Know file Input/output
EC2109.5	Understand various data types like lists, tuples, strings etc
EC2109.6	Know the usage of various pre-defined functions on the above data types

Year/Sem: II B.Tech II SEM

Course Name: Electronic Circuit Analysis	
Course Code: EC2201	
EC2201.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
EC2201.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT.
EC2201.3	Know the feedback amplifiers and feedback amplifier topologies
EC2201.4	Derive the expressions for feedback amplifiers Gain and impedance of input and output
EC2201.5	Derive the expressions for frequency ofoscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stabilityconcept.
EC2201.6	Know the classification of the power and tuned amplifiers and their analysis with performance comparison.

Course Name: Digital IC Design	
Course Code: EC2202	
EC2202.1	Introduction of digital logic families and inter facing concepts for digital



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	design is considered.
EC2202.2	VHDL fundamentals were discussed to modelling the digital system design blocks.
EC2202.3	Design and implementation of combinational and sequential digital logic circuits is explained.
EC2202.4	Model complex digital systems at several levels of abstractions, behavioural, structural, simulation, synthesis and rapid system prototyping.
EC2202.5	Analyze basic digital circuits with combinatorial circuits using VHDL.
EC2202.6	Analyze sequential logic circuits using VHDL Evaluate the basic design steps for Synchronous and Asynchronous Sequential Circuits.

Course Name: Analog Communications	
Course Code: EC2203	
EC2203.1	Understand modulation and demodulation Techniques of Amplitude modulation.
EC2203.2	Applying modulation and demodulation Techniques to DSB & SS
EC2203.3	Learn the basic concepts of Frequency modulation and also modulation and demodulation Techniques.
EC2203.4	Able to explain the principles of Radio Transmitters and Receivers.
EC2203.5	Analyse the Noise performance of AM, DSB, SSB and FM and Understand the generation and demodulation of pulse analog modulation techniques.
EC2203.6	Analyse Understand the generation and demodulation of pulse analog modulation techniques.

Course Name: Linear control Systems	
Course Code: EC2204	
EC2204.1	Explain the concepts of feedback and its advantages to various control systems
EC2204.2	Analyze the performance metrics to design the control system in time-domain
EC2204.3	Find the stability analysis for control systems
EC2204.4	Draw the root locus for control systems
EC2204.5	Analyze the performance metrics to design the control system in frequency-domain
EC2204.6	Analyze the state space approach for the analysis of control systems

Course Name: Management and Organizational Behaviour	
Course Code: EC2205	
EC2205.1	After completion of the Course the student will acquire the knowledge on management, Functions, global leadership and organizational structure.
EC2205.2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
EC2205.3	The learner is able to think in strategically through contemporary management practices.
EC2205.4	The learner may also know about the contemporary practices in concept
EC2205.5	The learner can develop positive attitude through personality development and can equip



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	with motivational theories.
EC2205.6	The student can attain the group performance and grievance handling in managing the organizational culture.

Course Name: Electronic Circuit Analysis Lab	
Course Code: EC2206	
EC2204.1	Determination of f_T for transistor
EC2204.2	Design different types of Amplifier and Oscillator circuits
EC2204.3	Simulate different types of Amplifier and Oscillator circuits using software tool
EC2204.4	Test different types of Amplifiers and Oscillator circuits using hardware.
EC2204.5	Design the power amplifiers using software and hard ware to
EC2204.6	Design the Tuned amplifiers to find the factor using software and hard ware to

Course Name: Analog Communications Lab	
Course Code: EC2207	
EC2207.1	Analyze the concepts, write and simulate the concepts of AM and AM Demodulation process in Communication.
EC2207.2	Know the origin and simulation of FM and FM-Demodulation process in communication
EC2207.3	Acquaint with AM and FM basic functionalities
EC2207.4	Discriminate the AM and FM functionalities
EC2207.5	Interpret with various angle modulation and demodulation systems
EC2207.6	Create the writing and simulation environments in PWM, PPM, Mixer and ring modulation

Course Name: Digital IC Design Lab	
Course Code: EC2208	
EC2208.1	Demonstrate a clear Understanding in hardware design language VHDL.
EC2208.2	Verify the logic behaviour of IC gates
EC2208.3	Model a Combinational circuit using VHDL and validate its functionality.
EC2208.4	Model a Sequential circuit using VHDL and validate its functionality
EC2208.5	Model a SHIFT REGISTERS using VHDL and validate its functionality
EC2208.6	Model MAC & ALU using VHDL and validate its functionality

Course Name: Soft Skills	
Course Code: EC2209	
EC2209.1	Use language fluently, accurately and appropriately in debates and group discussions
EC2209.2	Exhibit interview skills and develop soft skills
EC2209.3	Understand how to making meeting effective, Negotiation skills
EC2209.4	Use their skills of listening comprehension to communicate effectively in cross-cultural contexts



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EC2209.5	Learn and use new vocabulary
EC2209.6	Write resumes, project reports and reviews.

Course Name: Constitution of India	
Course Code: EC2210	
EC2210.1	Understand historical background of the constitution making and its importance for building a democratic India.
EC2210.2	Understand the function of Union Government and its Administration Secretariat, Lok Sabha, Rajya Sabha,
EC2210.3	The Supreme Court and High Court: Powers and Functions;
EC2210.4	Understand the structure of state government & Central Government
EC2210.5	Analyze the decentralization of power between central, state and local self-government
EC2210.6	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

Year/Sem: III B.Tech I SEM

Course Name: Analog ICs and Applications	
Course Code EC3101	
EC3104.1	Describe the characteristics of operational amplifiers.
EC3104.2	Design the various linear and non-linear applications of op-amp.
EC3104.3	Design the Active filters using Operational Amplifier
EC3104.4	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
EC3104.5	Discuss the Applications of Operational amplifier: 555 Timer, PLL
EC3104.6	Use the Op-Amp in A to D & D to A Converters

Course Name: Electromagnetic Waves and Transmission Lines	
Course Code: EC3102	
EC3102.1	Acquire knowledge on various types of transmission lines, derive transmission-line equations from a circuit model in terms of primary and secondary constants



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EC3102.2	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart
EC3102.3	Determine E and H using various laws and applications of electric & magnetic fields
EC3102.4	Apply the Maxwell equations to analyze the time varying behaviour of EM waves
EC3102.5	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
EC3102.6	. Calculate Brewster angle, critical angle and total internal reflection

Course Name: Digital Communications	
Course Code: EC3103	
EC3103.1	Define and Determine the performance of pulse digital modulation techniques such as PCM,DPCM,DM,ADM.
EC3103.2	Elaborate the principles of digital modulation techniques like ASK, FSK, PSK, DPSK, and QPSK.
EC3103.3	Determine the probability of error for digital modulation schemes such as FSK,ASK, BPSK
EC3103.4	Determine the probability of error for digital modulation schemes such as BPSK, BFSK, and QPSK.
EC3103.5	Understand the concept of digital information over the channel, Analyze different source coding techniques Shanon-Fano coding, Huffman coding etc.
EC3103.6	Able to Compute and analyze different error control coding schemes along with different domain approaches.

Course Name: Open Elective Course-1 (Renewable Energy Sources)	
Course Code: EC3104	
EC3104.1	Analyze solar radiation data, extra-terrestrial radiation, radiation on earth's surface and Solar energy storage
EC3104.2	Illustrate the components of Wind energy systems
EC3104.3	Illustrate the working of bio digesters
EC3104.4	Illustrate the working of geothermal plants
EC3104.5	Demonstrate the principle of energy production from OTEC, Tidal and Waves
EC3104.6	Explain the concept and working of Fuel cells & MHD Power generation

Course Name: Professional Elective courses -1 (Electronic Measurements and Instrumentation)	
Course Code: EC3105	
EC3105.1	Select the instrument to be used based on the requirements.
EC3105.2	Understand and analyze different signal generators and analyzers.
EC3105.3	Understand the design of oscilloscopes for different applications
EC3105.4	Understand the design of Digital oscilloscopes for different applications
EC3105.5	Design and derive the different bridges
EC3105.6	Design different transducers for measurement of different parameters



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Course Name: Analog ICs and Applications LAB	
Course Code: EC3106	
EC3106.1	Design and analyse the various linear application of op-amp
EC3106.2	Design and analyse the various non-linear application of op-amp
EC3106.3	Design and analyse filter circuits using op-amp
EC3106.4	Design and analyse oscillators and multivibrator circuits using op-amp
EC3106.5	Design and analyse the various application of 555 timer
EC3106.6	Analyse the performance of oscillators and multivibrators using PSPICE.

Course Name: Digital Communications Lab	
Course Code: EC3107	
EC3107.1	Able to understand basic theories of Digital communication system in practical.
EC3107.2	Able to design and implement different modulation and demodulation techniques.
EC3107.3	Able to analyze digital modulation techniques
EC3107.4	Able to identify and describe different techniques in modern digital communications, in particular in source coding
EC3107.5	Able to perform channel coding.
EC3107.6	Able to detect and correct errors using LBC, Binary Cyclic codes & detect dual bit errors in Convolution codes

Course Name: Data Structures using Java Lab	
Course Code: EC3108	
EC3108.1	To examine the components that form an abstract data type(ADT),also implement a programmer – defined ADT in Java
EC3108.2	Create to implementations of the Stack ADT and Queue ADT one based on an array representation of stack and the other based on a singly linked list representation.
EC3108.3	Determining and Analyzing the execution times of sorting and searching routines .
EC3108.4	Computation of shortest paths by dfs and bfs for a given graph
EC3108.5	Simulating the flow of tasks in an operating system using priority queue ADT
EC3108.6	Computation of shortest paths by dfs and bfs for a given graph Implementation of KMP pattern matching algorithm using JAVA.

Course Name: Indian Traditional Knowledge	
Course Code: EC3109	
EC3109.1	Identify the concept of Traditional knowledge and its importance.
EC3109.2	Explain the need for and importance of protecting traditional knowledge
EC3109.3	Illustrate the various enactments related to the protection of traditional knowledge.
EC3109.4	Interpret the concepts of Intellectual property to protect the traditional knowledge.
EC3109.5	Explain the importance of Traditional knowledge in Agriculture and Medicine.
EC3109.6	Explain the importance of Traditional knowledge in Agriculture and



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	Medicine.
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Course Name: Summer Internship 2 Months	
Course Code: EC3110:	
EC3104.1	Understanding the modern tools used in the field of Electronics and Communication engineering for product development
EC3104.2	Work in real time situations in industries through hands on job execution
EC3104.3	Apply theoretical aspects to solve engineering problems in the industries
EC3104.4	Understand the resources requirement and planning to facilitate the Internship success.

Year/Sem: III B.Tech II SEM

Course Name: Microprocessor and Microcontrollers	
Course Code: EC3201	
EC3201.1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors
EC3201.2	To be able to understand the addressing modes of microprocessors
EC3201.3	To be able to understand the micro controller capability
EC3201.4	To be able to program MP&MC
EC3201.5	To be able to interface MP & MC with other electronic devices
EC3201.6	To be able to understand the ARM processor architecture

Course Name: VLSI Design	
Course Code: EC3202	
C3204.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
C3204.2	Apply the design Rules and draw layout of a given logic circuit
C3204.3	Design MOSFET based logic circuit. Design basic building blocks in Analog IC design.
C3204.4	Analyze the behaviour of amplifier circuits with various loads
C3204.5	Design various CMOS logic circuits for design of Combinational logic circuits.
C3204.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS

Course Name: Digital Signal Processing	
Course Code: EC3203	
EC3203.1	Apply the difference equations concept in the analyzation of Discrete time



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	systems
EC3203.2	Able to apply the FFT algorithm for solving the DFT of a given signal
EC3203.3	Student can able to design a Digital filter (IIR) from the given specifications and Realize the IIR Structures.
EC3203.4	Design a Digital filter (FIR) from the given specifications and Realize the FIR Structures.
EC3203.5	Use the Multirate Processing concepts in various applications Such as Design of phase shifters, Interfacing of digital systems.
EC3203.6	Able to learn the architecture of DSP Processor and addressing modes.

Course Name: Professional Elective courses – 2 (Mobile & Cellular Communication)	
Course Code: EC3204	
EC3204.1	Introduction to Cellular Mobile System, Cellular Concepts
EC3204.2	Types of interferences, Co-channel Interference Reduction Factor, non-co-channel interference-different types.
EC3204.3	Frequency management And Channel Assignment, Numbering and grouping
EC3204.4	Cell Coverage For Signal , phase difference between direct and reflected paths
EC3204.5	TRAFFIC Concept of Handof, types of handoff, soft and hard hand offs,
EC3204.6	Digital Cellular Networks, GSM architecture, TDMA, CDMA, OFDMA

Course Name: Open Elective Course/Job oriented elective -2 (Computer Networks)	
Course Code: EC3205	
EC3205.1	Demonstrate different network topologies, reference models OSI, TCP/IP, methods and protocol standards, Identification and working mechanism of transmission media
EC3205.2	Demonstrate the various services provided by Data link layer, flow and error controlling by HDLC and PPP.
EC3205.3	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
EC3205.4	Demonstrate the various Wired LAN protocols used for data transmission.
EC3205.5	Able to demonstrate how the packets are routed using network layer protocols, Congestion Control, traffic controlling in network, Addressing and internet routing is demonstrated.
EC3205.6	Demonstrated the User datagram and transport datagram, error and flow control mechanism at high layers. Determine application layer services and client server protocols working with the client server paradigms.

Course Name: Microprocessor and Microcontrollers - Lab	
Course Code:	
EC3206	
EC3204.1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
EC3204.2	Explain 80x86/80x51instruction set and gain the knowledge how assembly



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	language works
EC3204.3	The student will learn hardware and software interaction and integration.
EC3204.4	To apply the concepts in the design of microprocessor/microcontroller based systems in real time applications
EC3204.5	Make use of standard test and measurement equipment to evaluate digital interfaces.
EC3204.6	To understand the KEIL MDK software

Course Name: VLSI Design Lab	
Course Code: EC3207	
EC3204.1	Understand the physical design process of Digital Integrated Circuits.
EC3204.2	Describe procedure for designing of programmable circuits.
EC3204.3	Demonstrate the ability to use various EDA tools for digital system design
EC3204.4	Demonstrate the ability to use various Mentor Graphics Software for digital system design
EC3204.5	Implement various combinational and sequential circuits using VHDL on FPGA.
EC3204.6	Implement schematic and layout of various digital CMOS logic circuits using EDA tools.

Course Name: Digital Signal Processing Lab	
Course Code: EC3208	
EC3208.1	Carryout basic signal processing operations
EC3208.2	Design and Implement the FIR and IIR Filters using MATLAB
EC3208.3	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
EC3208.4	Analyze the architecture of a DSP Processor
EC3208.5	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
EC3208.6	Design a DSP system for various applications of DSP

Course Name: ARM based/ Aurdino based Programming Lab	
Course Code: EC3209	
EC3209.1	Comprehend Microcontroller-Sensors Interface techniques
EC3209.2	Comprehend Microcontroller-Transducers Interface techniques
EC3209.3	Establish Serial Communication link with Arduino
EC3209.4	Analyze basics of SPI interface
EC3209.5	Interface Stepper Motor with Arduino
EC3209.6	Analyze Accelerometer interface techniques



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Course Name: Research Methodology	
Course Code: EC3210	
EC3210.1	Explain key research concepts and issues
EC3210.2	Read, comprehend, and explain research articles in their academic discipline
EC3210.3	Fundamentals of Research Methodology.
EC3210.4	Quantitative methods
EC3210.5	Decision making on research topics.
EC3210.6	Identifying sources of research problems

Year/Sem: IV B.Tech I SEM

Course Name: Professional Elective courses -3 (Digital Image Processing)	
Course Code EC4101	
EC4101.1	Know the fundamentals of a digital image processing; representation of digital images in transform domain; and various mathematical transforms necessary for image processing.
EC4101.2	Learn and implement various Intensity transformations and spatial filtering methods in image enhancement and image restoration process.
EC4101.3	To know Image Restoration and Reconstruction process by using different mathematical approaches.
EC4101.4	To understand compressing images by using different mathematical approaches.
EC4101.5	To know image segmentation by the detection of point,line and edges in images, edge linking through local/global processing.
EC4101.6	To Analyze pseudo and full color image processing techniques

Course Name: Professional Elective courses -4 (Satellite Communications)	
Course Code: EC4102	
EC4102.1	Able to learn the basic concepts of applications, frequencies used and types of satellite communication.Able to Explore the concepts of orbital mechanics and launchers in
EC4102.2	Able to learn satellite sub systems used for tracking and commanding
EC4102.3	Derive the expression for G/T ratio and C/N Ratio of the satellite system
EC4102.4	Able to analyse the satellite link with specified G/T and C/N Ratios
EC4102.5	Know various types of multiple access techniques and Understand Earth station technology with earth orbits.
EC4102.6	Define the concepts of GPS and its architecture, Know architecture of earth station and constellation Designs

Course Name: Professional Elective courses -5 (Internet of Things)	
Course Code: EC4103	
EC4103.1	Explain in a concise manner how the general Internet as well as Internet of Things



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	work
EC4103.2	Understand constraints and opportunities of wireless and mobile networks for Internet of Things.
EC4103.3	Use basic sensing and measurement and tools to determine the real-time performance of network of devices.
EC4103.4	Apply knowledge of security aspects for data acquiring, and authentication.
EC4103.5	Develop prototype models for various applications using IoT technology.
EC4103.6	

Course Name: Open Elective Courses/ Job oriented elective -3 (Cloud Computing)	
Course Code: EC4104	
EC4104.1	Understand and analyze the architecture of Cloud (Analyze).
EC4104.2	Cloud Service Models Software as a Service (SaaS)(PAAS)
EC4104.3	What is Virtualization
EC4104.4	Types of Hypervisor, and Load balancing.
EC4104.5	Identify and apply deployment and management options of AWS Cloud Architecture (Apply).
EC4104.6	Design architectures to decouple infrastructure and reduce interdependencies (Create).

Course Name: Open Elective Courses/ Job oriented elective -4 (Cyber Security)	
Course Code: EC4105	
EC4105.1	Understanding Cyber Security architecture principles
EC2105.2	Identifying system and application security threats and vulnerabilities
EC2105.3	Identifying different classes of attacks
EC2105.4	Cyber security incidents to apply appropriate response
EC2105.5	Describing risk management processes and practices
EC2105.6	Evaluation of decision making outcomes of Cyber Security scenarios

Course Name: Humanities and Social Science Elective(UNIVERSAL HUMAN VALUES)	
Course Code: EC4106	
EC4106.1	By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature)
EC4106.2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
EC4106.3	They would have better critical ability. They would also become sensitive to their commitment towards
EC4106.4	They have understood (human values, human relationship and human society).
EC4106.5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
EC4106.6	This is only an introductory foundational input. It would be desirable to follow it up by a) faculty-student or mentor-mentee programs throughout their time with the institution b) Higher level courses on human values in every aspect of living. E.g. as a professional



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Course Name: Designer tools	
Course Code: EC4107	
EC4107.1	Able to propose a complex engineering problem using mathematical knowledge
EC4107.2	Able to identify problems those are carried by engineering knowledge
EC4107.3	Able to learn how to conduct detailed investigation on a research problem
EC4107.4	Able to learn how to use modern tools to carry the research problem
EC4107.5	Design a model using contextual knowledge useful for social need
EC4107.6	Able to learn regarding development of a system in an ethical way.

Year/Sem: IV B.Tech II SEM

Course Name: Project work	
Course Code: EC4201	
EC4201.1	Work on proposed engineering solution as per industry need
EC4201.2	Customize various tools and techniques needed for project development.
EC4201.3	Understand significance of safe and ethical practices during project.
EC4201.4	Work in a team with healthy working environment
EC4201.5	Develop skill to present project related activities effectively to peers and mentors.
EC4201.6	Develop skill to innovate the developed project and convert it in form of product for industrial / societal need.