Vidya Jyothi Institute of Technology

ELECTRONICS AND COMMUNICATION ENGINEERING
II B.TECH-I SEM

A13012. MATHEMATICS-IV
(SPECIAL FUNCTIONS AND FUNCTIONS OF A COMPLEX VARIABLE)
COURSE OUTCOMES:

C201.1	Residue Theorem Identify Bessel equation and solve it under special conditions with the help of series solutions method. Also recurrence relations and orthogonality properties of Legendre polynomials.
C201.2	Analyze the complex functions with reference to their analyticity, Integration using Cauchy's integral theorem,
C201.3	Expansion of a given function as a Taylor's
C201.4	Expansion of a given function as a Laurent series
C201.5	Solving Real Definite Integrals using Cauchy's.

A13401. ELECTRONIC DEVICES AND CIRCUITS
COURSE OUTCOMES:

C202.1	Understand and Analyze the different types of diodes, operation and its characteristics
C202.2	To analyze and design diode application circuits like rectifiers, filters.
C202.3	Understand and Analyze the operation and characteristics of BJT and FET.
C202.4	Design and analyze the DC bias circuitry of BJT and FET,
C202.5	Design biasing circuits using diodes and transistors

A13402. SIGNALS AND SYSTEMS
COURSE OUTCOMES:

C203.1	Represent any arbitrary signals in terms of complete sets of orthogonal functions and understands the principles of impulse functions, step function and signum function.
C203.2	Express periodic signals in terms of Fourier series and express the spectrum and express the arbitrary signal (discrete) as Fourier transform to draw the spectrum.
C203.3	Understands the principle of linear system, filter characteristics of a system and its bandwidth, the concepts of auto correlation and cross correlation and power Density Spectrum and can design a system for sampling a signal.
C203.4	For a given system, response can be obtained using Laplace transform, properties and ROC of L.T
C203.5	Study the continuous and discrete signal relation and relation between F.T., L.T. & Z.T, properties, ROC of Z Transform.

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A13403. SWITCHING THEORY AND LOGIC DESIGN
COURSE OUTCOMES:

C204.1	Manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray and BCD.
C204.2	Manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
C204.3	Design and analyze small combinational circuits
C204.4	To use standard combinational functions/building blocks to build larger more complex circuits.
C204.5	Design and analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits.

A13404. ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
Course Outcomes:

C205.1	Describe the fundamental concepts and principles of instrumentation explain the operations of the various instruments required in measurements.
C205.2	Apply the measurement techniques for different types of tests and to select specific instrument for specific measurement function.
C205.3	Understand principle of operation, working of different electronic instruments like digital multi meter, vector voltmeter.
C205.4	Learners will apply knowledge of different oscilloscopes like CRO, DSO and will understand functioning, specification, and applications of signal analysing instruments.
C205.5	Students will understand functioning, specification, and applications of signal analysing instruments

A13405. PROBABILITY THEORY AND STOCHASTIC PROCESS
COURSE OUTCOMES:

C206.1	Demonstrate knowledge in Probability theory Single and multiple random variables
C206.2	Random processes and their characteristics
C206.3	Analyze operations on single and multiple random variables and processes.
C206.4	Will be able to compute: Least -square & maximum likelihood estimators for engineering problems. Mean and covariance functions for simple random processes.
C206.5	Design solutions for complex engineering problems involving random processes.

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A13481. ELECTRONIC DEVICES AND CIRCUITS LAB
COURSE OUTCOMES:

C207.1	To Identify and use the basic components of basic components of electronics laboratory
C207.2	To understand and use the basic instrument of the laboratories used in measurements
C207.3	To Understand and show the characteristics and applications of Diode
C207.4	To identify and produce the characteristics and applications of transistors
C207.5	To identify and produce the characteristics and applications of FETs

A13482. BASIC SIMULATION LAB
COURSE OUTCOMES:

C208.1	To Quantify and verify the various operation on signals.
C208.2	To Analyze and implement the convolution and correlation on signals.
C208.3	To understand and analyze the transforms on signals and systems.
C208.4	To find power spectrum of a given signal
C208.5	To study and implement the noise removal on periodic signal.

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II B.TECH-II SEM

A14211. PRINCIPLES OF ELECTRICAL ENGINEERING
COURSE OUTCOMES:

C209.1	The knowledge on transient analysis of circuits
C209.2	The basic two-port network parameters and the design analysis of the filters and attenuators and their use in the circuit theory.
C209.3	The operation of DC machines
C209.4	The operation of DC transformers
C209.5	Able to apply the above conceptual things to real-world problems and applications.

A14409. ELECTRONIC CIRCUIT ANALYSIS
COURSE OUTCOMES:

C210.1	Design and analyze small signal amplifier circuits applying the biasing techniques learnt earlier.
C210.2	Cascade different amplifier configurations to obtain the required overall specifications like Gain, Bandwidth, Input and Output interfacing Impedances.
C210.3	Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
C210.4	Utilize the Concepts of negative feedback to improve the stability of amplifiers
C210.5	Utilize the Concepts of positive feedback to generate sustained oscillations.

A14410. PULSE AND DIGITAL CIRCUITS
COURSE OUTCOMES:

C211.1	Understand the applications of diode as integrator, differentiator, clippers, clampler circuits.
C211.2	Learn various switching devices such as diode, transistor, SCR.
C211.3	Difference between logic gates and sampling gates.
C211.4	Design mutivibrators for various applications, synchronization techniques and sweep circuits.
C211.5	Realizing logic gates using diodes and transistors.

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A14411. ELECTROMAGENETIC THEORY AND TRANSMISSION LINES
COURSE OUTCOMES:

C212.1	Study time varying Maxwell's equations and their applications in electromagnetic problems.
C212.2	Determine the relationship between time varying electric and magnetic fields and electromotive force.
C212.3	Analyze basic transmissions line parameters in phasor domain.
C212.4	Use Maxwells equations to describe the propagation of electromagnetic waves in vaccum.
C212.5	Show how waves propagate in Dielectrics and lossy media and Demonstrate the reflection and refraction of waves at boundaries.

A14412. DIGITAL SYSTEM DESIGN
Course Outcomes:

C213.1	Describe Verilog hardware description, languages(HDL) and Design digital circuits.
C213.2	Write Behavioural models of digital circuits and Write Register Transfer Level (RTL) models of Digital Circuits.
C213.3	Verify Behavioural and RTL models and Describe standard cell libraries and FPGAs
C213.4	Synthesize RTL models to standard cell libraries and FPGAs
C213.5	Implement RTL models on FPGAs and Testin and Verification

A14016. ENVIRONMENTAL SCIENCE
(Common to all Branches)
Course Outcomes:

C214.1	Understand the importance of Ecosystem and its Resources.
C214.2	Be aware on the Variety of Living organism and the need to conserve them.
C214.3	Understand the impacts of Developmental Activities.
C214.4	Understand the Environmental Policies, Management Plan and Regulations.
C214.5	Sensitize on a Sustainable Future.

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A14485. ELECTRONIC CIRCUITS AND ANALYSIS LAB
Course Outcomes:

C215.1	To Implement and verify the response of small signal Amplifiers
C215.2	To Identify and illustrate the time response of oscillators
C215.3	To Prepare and summarize the response of power amplifiers
C215.4	To illustrate and show the frequency of oscillations of tune amplifiers.
C215.5	To Implement and verify the response of various feedback amplifiers

A14486. PULSE AND DIGITAL CIRCUITS LAB
Course Outcomes:

C216.1	To Understand and implement the Linear wave shaping circuits
C216.2	To Understand and implement the Non-Linear wave shaping circuits
C216.3	To Analyze and design the different multivibrators
C216.4	To Recite and relate the relaxation oscillator
C216.5	To design and analyze switching characteristics of a BJT.

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III B.TECH- I SEM

A15413.ANALOG COMMUNICATIONS
Course Outcomes
At the end of the course the student should be able to

C301.1	Understand the importance of probability theory and the properties of Fourier Transformfor the Analysis of Analog Communication Systems.
C301.2	Interpret the Time and Frequency domain analysis of different analog modulation Schemes
C301.3	Analyze the given communication system for computing the transmission bandwidth,Power requirement based on the used modulation schemes.
C301.4	Design and Utilize different modulation and demodulation schemes used in Real time.
C301.5	Differentiate the various divergent noise and its effects on analog modulation schemes, also the various types of receiver characteristics.

A15414. LINEAR AND DIGITAL IC APPLICATIONS
Course Outcomes
At the end of the course the student should be able to

C302.1	Ability to elucidate the characteristics of ideal and practical operational amplifier
C302.2	Apply knowledge of mathematics to analyze operational amplifier in inverting and non-inverting configuration modes and develop the applications of IC 741.
C302.3	Examine and infer the functionality of 555 timer and 565 PLL Integrated circuits.
C302.4	Interpret the concepts and features of Analog to Digital and Digital to Analog converter in Integrated circuits form.
C302.5	Evaluate the various Combinational and sequential logic using 74XX Digital Integrated circuits.

A15415. CONTROL SYSTEMS ENGINEERING
Course Outcomes
At the end of the course the student should be able to

C303.1	Demonstrate and understand the fundamentals of control systems.
C303.2	Determine and use models of physical systems in different forms suitable for use in the analysis and design of control systems.
C303.3	Relate the time and frequency-domain responses of first order systems to step and sinusoidal inputs.
C303.4	Relate the time and frequency-domain responses of second-order systems to step and sinusoidal inputs.
C303.5	Examine the stability of a closed-loop control system

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A15416. COMPUTER ORGANIZATION AND ARCHITECTURE
(Professional Elective-I)

Course Outcomes

At the end of the course the student should be able to

C304.1	Recall the structure and organization involved in digital computer design.
C304.2	Identify the different memory and input- output system involved in system design.
C304.3	Understand the basics of computer organization
C304.4	Understand the design on program control and computer arithmetic operations.
C304.5	Comprehend the various details of multiprocessor in computer design

A15419. INTRODUCTION TO MICROCONTROLLERS AND APPLICATIONS
(Open Elective – I)

Course Outcomes

At the end of the course the student should be able to

C305.1	Interpret the internal organization of 8051 with its unique features.
C305.2	Infer and give examples about the various addressing modes, instruction formats and instructions of 8051.
C305.3	To understand the various interfacing techniques pertaining to system design.
C305.4	Construct the hardware and software interaction with each other using programming.
C305.5	Summarize the features of the advanced architecture using ARM controller.

SMART CITY (SC)

Course Outcomes

At the end of the course the student should be able to

C305.1	Understand the necessity of smart infrastructure and to promote cities that provide quality of life to citizens.
C305.2	Explain technology-based solution on smart mobility.
C305.3	Illustrate & introduce the smart and sustainable waste and water management for smart cities.
C305.4	Evaluate economical models for smart infrastructure solution.
C305.5	Create healthy and waste ridden environment.

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ELEMENTS OF MECHANICAL ENGINEERING (EME)

Course Outcomes
At the end of the course the student should be able to

C305.1	Understand the basic concepts of mechanical engineering.
C305.2	Applying principles of engineering mechanics in mechanism and machines
C305.3	Develop manufacturing methods to produce engineering components.
C305.4	Evaluating alternative designs for the engineering components
C305.5	Comparing various standards relevant to automobiles.

PRODUCT ENGINEERING (PE)

Course Outcomes
At the end of the course the student should be able to

C305.1	Identifying scheduling techniques for project management.
C305.2	Designing the products and their life cycles.
C305.3	Generating the products with different material requirements.
C305.4	Conceptualization the products with their drawings for standardization.
C305.5	Evaluating the life of the products by conducting various tests.

JAVA PROGRAMMING(OPEN ELECTIVE)

Course Outcomes
At the end of the course the student should be able to

C305.1	Apply OOP concepts in Java Programming
C305.2	Analyze the concepts of JAVA programming for problem solving
C305.3	Evaluate the concepts of packages and interfaces in java
C305.4	Analyze the usage of Exception Handling and Multithreading in complex Java programs
C305.5	Create GUI Applications and Applets

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OPERATING SYSTEMS(OPEN ELECTIVE)

Course Outcomes
At the end of the course the student should be able to

C305.1	Understand the functions of Operating Systems.
C305.2	Evaluate various process scheduling algorithms.
C305.3	Analyze various memory allocation techniques for effective utilization of memory.
C305.4	Evaluate various file concepts for effective storage.
C305.5	Analyze the concepts of deadlocks.

TOTAL QUALITY MANAGEMENT (TQM)
Course Outcomes
At the end of the course the student should be able to

C305.1	To explore the quality framework in production and operational aspects.
C305.2	To evaluate the role of quality in product design and analysis.
C305.3	To analyze quality in process improvement and modern production management tools.
C305.4	To understand the role of TQM tools and techniques in elimination of wastages and reduction of defects
C305.5	To analyze the requirements of quality management system.

REMOTE SENSING& GIS (RS&GIS)
Course Outcomes
At the end of the course the student should be able to

C305.1	Select the type of remote sensing technique / data for required purpose.
C305.2	Identify the earth surface features from satellite images.
C305.3	Analyze the energy interactions in the atmosphere and earth surface features.
C305.4	Prepare thematic maps.
C305.5	Interpretations of satellite data for various applications.

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A15420. BASIC ELECTRONICS AND INSTRUMENTATION

(Open Elective-I)
Course Outcomes
At the end of the course the student should be able to

C305.1	Summarize the concepts of different semiconductor devices with its characteristics.
C305.2	Describe the fundamental concepts and basic principle of meters.
C305.3	To classify the types of transducer with its methodology of data collection.
C305.4	Categorize different transducers and their working principles
C305.5	Explain different bridges and understand how different physical parameters can be acquired.

A15487. ANALOG COMMUNICATION LAB

C306.1	To implement and verify the different techniques in Amplitude modulation.
C306.2	To Analyze and interpret the results in frequency domain using the spectrum Analyzer
C306.3	To recite and relate the frequency modulation and demodulation
C306.4	To implement and summarize the different Pulse modulation and demodulation methods
C306.5	To calculate the frequency response of Pre-Emphasis and De-Emphasis

A15488. LDIC Application Lab

C307.1	To implement and verify the application of IC 741
C307.2	To analyze and interpret the application of IC 555
C307.3	To Implement and verify the Small scale integrated circuits
C307.4	To Understand and evaluate the counter IC's and shift registers.
C307.5	To verify Various logic gates and flip flops.

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A158089. ADVANCED COMMUNICATION SKILLS LAB
COURSE OUTCOMES

C308.1	The student will be able to build communication competence in person-to-person interactions to build self-efficacy and to manage relationships and improve communicative behaviour of dyadic interactions in various contexts.
C308.2	The student will be able to annotate effectively for active reading, increased comprehension & retention while synthesizing information both print and online sources for their relevance, accuracy and appropriateness.
C308.3	The student will be able to develop unique qualities of professional rhetoric and writing style and explore different format features in both print, multimedia documents, and develop document design skills.
C308.4	The student will be able to identify essential components of Presentation and will be able to speak with greater control and charisma in front of a larger audience.
C308.5	The students will be able to know the significance of group activities and acquire oral skills & body language used for effective Group discussion and prepared to face interviews.

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III B.TECH- II SEM

A16018. MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
Course Outcomes

At the end of the course the students is expected

C309.1	To understand and enhance the knowledge regarding managerial economics concepts and obtaining optimal solutions.
C309.2	To get an idea of analysis of firm's financial position with the techniques of financial analysis
C309.3	To get an idea of analysis of firm's financial position with the techniques of ratio analysis.
C309.4	To understand analysis of markets, forms of business organizations,
C309.5	To know the significance of capital budgeting

A16422. VLSI DEISGN
Course Outcomes

At the end of the course the student should be able to

C310.1	Explain the fabrication process involved in Integrated Circuit Technology and label the effects of current and voltage in MOS transistors.
C310.2	Understand the primary and secondary effects of MOSFET and BICMOS
C310.3	Summarize the divergent techniques involved in design of VLSI circuits using Design Rules.
C310.4	List various Static and dynamic CMOS gate circuits involved in System design.
C310.5	Illustrate the process involved in programmable logic design and testing methods.

A16423. DIGITAL SIGNAL PROCESSING
Course Outcomes

At the end of the course the student should be able to

C311.1	Define the different discrete time signals and show the methods of applying Z-transforms on Discrete Time Linear Time Invariant systems (DTLTI).
C311.2	Able to compute the divergence between the transforms (DTFS/DTFT/DFT) and illustrate the effects of each on Discrete time signals.
C311.3	Interpret the methodology of Discrete Fourier transform with its properties and methodology of faster computations.
C311.4	List, Differentiate Design and implement the different methods involved in Filter design (FIR/IIR)
C311.5	State the effects of different quantization noise on recursive systems and enumerate the role of multirate signal processing on discrete time signals.

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A16424. MICROPROCESSORS AND MICROCONTROLLERS
Course Outcomes

At the end of the course the student should be able to

C312.1	Memorize the internal organization of 8086
C312.2	Apply the divergent techniques involved in assembly level language programming of 8086 for different data manipulation applications.
C312.3	To list and analyze the techniques involved in assembly language programming of 8086
C312.4	Summarize various interfacing integrated circuits for peripheral devices using 8086.
C312.5	List and express the internal features of 8051 with its programming.

A16425. OPTICAL COMMUNICATIONS
(Professional Elective-II)
Course Outcomes

At the end of the course the student should be able to

C313.1	Recognize the constructional materials of Optical fibers and its impact on communications.
C313.2	Summarize the channel impairments (like losses and dispersion)that occur in an opticalcommunications.
C313.3	Compare the different signal sources used for optical communications with its methodology of coupling
C313.4	illustrate the methodology and construction of photodetectors and the performance of digital receivers using optic fiber.
C313.5	Contrast the communication performed in the optic fiber systems and recall the divergent multiplexing techniques involved in it.

A16426. PROGRAMMING IN MATLAB
(Professional Elective-II)
Course Outcomes

At the end of the course the student should be able to

C314.1	Develop codes on various domains of Electronics and Communication Engineering
C314.2	Handle the advanced commands in appropriate fields of engineering
C314.3	Visualize the impact of parameters during simulation
C314.4	Cater the industrial needs pertaining to the semiconductor technologies.
C314.5	Understand the need for Simulink in various domains of Electronics and Communication

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A16427. SATELLITE AND WIRELESS COMMUNICATIONS

(Professional Elective-II)

Course Outcomes

C315.1	At the end of the course the student should be able to
C315.2	Understand the concepts and orbital aspects of satellite communication.
C315.3	Summarize the aspects of subsystem design and its involvement in ground tracking with suitable link margins.
C315.4	Outline the fundamentals and principles of wireless communications and networking.
C315.5	Relate and contrast the different layers involved in data communication of WLAN and WWAN.

ENVIRONMENT POLLUTION & CONTROL METHODS (EPCM)

Course Outcomes

At the end of the course the student should be able to

C316.1	Understanding about the various air pollutants and effect on environment.
C316.2	Analyze quality of air in the form of air quality index and dispersion modeling.
C316.3	Determine sampling and measurements of air Pollutants.
C316.4	Analysis and measurement of soil contamination.
C316.5	Predict types of noise and problems arise due to noise pollution.

GREEN BUILDING TECHNOLOGIES (GBT)

Course Outcomes

At the end of the course the student should be able to

C316.1	Understand the Green building concept and focus on approaches that make building sustainable.
C316.2	Illustrate Green building assessment and accreditation system.
C316.3	Able to apply low energy building strategies.
C316.4	Designing green building and improve sustainability ofinfrastructure.
C316.5	Classify the economic benefits of green buildings.

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BASIC AUTOMOBILE ENGINEERING (BAE)

Course Outcomes

At the end of the course the student should be able to

C316.1	Understanding the basic structure of an automobile.
C316.2	Evaluating different cooling and lubrication systems of an automobile.
C316.3	Analyzing the electrical systems in tandem with ignition systems.
C316.4	Comparing the various transmission systems for their effectiveness.
C316.5	Understanding and there by implement the subsystems in the automobile for its low emission.

MATERIAL SCIENCE ENGINEERING (MSE)

Course Outcomes

At the end of the course the student should be able to

C316.1	Understanding the crystal structures and necessity of alloys.
C316.2	Classifying the ferrous materials and their heat treatment process.
C316.3	Evaluating the non ferrous materials and their applications in Engineering usage.
C316.4	Applying the composite materials as an efficient substitute.
C316.5	Implementing the principles of nano science and their by producing materials.

DATA BASE MANAGEMENT SYSTEMS

Course Outcomes

At the end of the course the student should be able to

C316.1	Understand the Database Management systems concepts
C316.2	Analyze Entity-Relationship Model for enterprise level databases
C316.3	Develop a database and formulate the complex SQL queries
C316.4	Evaluate various Relational Formal Query Languages
C316.5	Analyze various Normal forms to carry out Schema refinement

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Software Engineering(Open Elective)
Course Outcomes

At the end of the course the student should be able to

C316.1	Understand various process models
C316.2	Apply requirement engineering process for a project.
C316.3	Analyze the design engineering and architectural design
C316.4	Evaluate various testing techniques
C316.5	Evaluate various metrics for process and products

FINANCIAL INSTITUTIONS AND MARKETS (FIM)

Course Outcomes
At the end of the course the student should be able to

C316.1	Understand object oriented software development process
C316.2	Gain exposure to object oriented methodologies & UML diagrams
C316.3	Use object oriented behavioral modeling analysis for project
C316.4	Apply object oriented Architectural modeling analysis for project
C316.5	Construct for developing structural design of a given project by using

A16428. FUNDAMENTALS OF EMBEDDED SYSTEMS
(Open Elective-II)

Course Outcomes

At the end of the course the student should be able to

C316.1	Contrast the basics of embedded system with its application
C316.2	Illustrate the components required for embedded system design.
C316.3	Summarize the different development tool for embedded system
C316.4	Relate the concepts of RTOS in real time programming
C316.5	Outline the features of advanced buses for distributed data transfer in system design.

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A16429. PRINCIPLES OF COMMUNICATIONS
(Open Elective-II)
Course Outcomes

At the end of the course the student should be able to

C316.1	Understanding the fundamentals of communications
C316.2	Summarize the different modulation techniques involved in analog and digital Communication.
C316.3	Identify the applications of various wired and wireless communications in real time.
C316.4	Elaborate the fundamentals of satellite and optical communications.
C316.5	Understand various Networking Concepts.

A16489. MICROPROCESSOR AND MICROCONTROLLER LAB
Course Outcomes

C317.1	To Understand and implement the basic programs of microprocessor (8086)
C317.2	To analyze and interpret the interfacing concept of microprocessor (8086) with other Processors
C317.3	To illustrate and show the different programs using Microcontroller (8051)
C317.4	To implement and verify the interfacing concepts with 8051 microcontroller
C317.5	Analyze Timers with 8051 microcontroller

A16490. DSP AND eCAD LAB
Course Outcomes

C318.1	To generate and verify the basic concepts of signal processing
C318.2	To design and summarize the result of different types of filters
C318.3	To understand DFT and FFT Algorithms
C318.4	To Implement and verify the combinational circuits using HDL
C318.5	To Understand and evaluate the sequential circuits using HDL

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IV B.TECH- I SEM

A17430. DIGITAL COMMUNICATIONS

Course Outcomes:

Upon successful completion of this course, students have the ability to

C401.1	Understand different digital modulation techniques such as PCM, DM and various shift keying techniques.
C401.2	Calculate different parameters like power spectrum density, probability of error etc of Base Band signal for optimum transmission.
C401.3	Generate and retrieve data using block codes and convolution codes
C401.4	Analyze the error detection and correction capabilities of linear, cyclic and convolution codes.
C401.5	Analyze Performance of spread spectrum communication system

A17431. EMBEDDED SYSTEM DESIGN

Course Outcomes:

Student will be able to

C402.1	Know the fundamentals, hardware and software details of the embedded systems
C402.2	Interface serial, parallel and network communication protocols to embedded systems
C402.3	Know the embedded system design life cycle and co-design issues.
C402.4	Analyze and Develop the various embedded system applications.
C402.5	To design real time operating systems

A17432. ANTENNAS AND MICROWAVE PROPAGATION

COURSE OUTCOMES

At the end of the course the student should be able to

C403.1	Aware of parameter considerations viz. antenna efficiency, beam efficiency, radiation resistance etc. in the design of an antenna.
C403.2	Understand the design issues, operation of fundamental antennas like Yagi-Uda, Horn antennas and helical structure and also their operation methodology in practice.
C403.3	Understand the different types of Wave propagation
C403.4	Understand the significance of microwaves and Analyze the characteristics of microwave tubes and compare them.
C403.5	Be able to list and explain the various microwave solid state devices and Can set up a microwave bench for measuring microwave parameters.

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A17433. DIGITAL IMAGE PROCESSING
(Professional Elective - 3)

Course Outcomes:

Upon successful completion of this course, students will be able to:

C404.1	Discuss digital image fundamentals
C404.2	utilize the Image processing concept to various fields of engineering and real time applications
C404.3	Apply image enhancement and restoration techniques and use image compression and segmentation Techniques.
C404.4	Represent features of images and implement basic image processing concepts using MATLAB.
C404.5	Experiment, analyze & interpret image data

A17437. TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS
(Professional Elective - 3)

Course Outcomes:

C405.1	Understand the main concepts of telecommunication network design.
C405.2	Analyze and evaluate fundamental telecommunication traffic models.
C405.3	Understand basic modern signaling system.
C405.4	Solve traditional interconnection switching system design problems.
C405.5	Understand the concept of packet switching

A17435. MULTIMEDIA AND SIGNAL CODING
(Professional Elective - 3)

Course Outcomes

Upon successful completion of this course, students will be capable to:

C406.1	Comprehend the fundamentals behind multimedia signal processing.
C406.2	Realize the fundamentals behind multimedia compression.
C406.3	Know the basic principles behind existing multimedia compression and communication standards.
C406.4	Understand future multimedia technologies
C406.5	apply the acquired knowledge to specific multimedia related problems and projects at work.

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A17436. DSP PROCESSORS AND ARCHITECTURES
(Professional Elective - 4)
COURSE OUTCOMES:
At the end of the course the student should be able to

C407.1	To Illustrate the signals and systems in frequency domain.
C407.2	To Evaluate the signals by using Discrete Fourier Series and to compute the Discrete Fourier Transform for different types of signal, To apply the DFT to the signals and systems for analyzing the systems and to represent the discrete time systems by using linear constant coefficient difference equations
C407.3	To Analyze Fast Fourier Transform of the discrete signal for analyzing them and to compare the DFT with FFT with respect to their complexity and time consumption. To explain the multi rate signal processing and to know different blocks like Decimation and Interpolation involved in the multi rate signal processing. To convert the sampling rates and implement the sampling rate conversion
C407.4	Understand the architecture for programmable DSP devices and programmable Digital signal processor
C407.5	Design DSP and FFT algorithms and interfacing of memory and I/O peripherals to programmable DSP devices.

A17438. LOW POWER VLSI DESIGN
(Professional Elective - 4)
Course Outcomes
At the end of the course the students should be able to

C408.1	Understand the need for low power VLSI design.
C408.2	Clearly find the various sources of power dissipation in a given VLSI circuits.
C408.3	Describe the relationship of probability while finding power dissipation of VLSI circuits.
C408.4	Design low power arithmetic circuits and systems.
C408.5	Design a low power memory sub systems.

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A17439. PROGRAMMING IN MATLAB

(Professional Elective - 3)

Course Outcomes:

The students will be able to:

C409.1	Break down computational problems into a series of simple steps.
C409.2	Create programs in the MATLAB language for engineering applications..
C409.3	Appraise and get familiarized with the visualization techniques.
C409.4	Familiarized with Different application tools required for different area of domain
C409.5	Expose to the common algorithms and techniques that are the building blocks of MATLAB.

A17491. EMBEDDED SYSTEM DESIGN LAB

Course Outcomes:

Students can able to

C410.1	Write programs using ARM cortex M0+ processor instruction set.
C410.2	Dump programs into FRDM kit.
C410.3	Communicate among different processors with FRDM kit
C410.4	Interface I/O devices with FRDM kit.
C410.5	Interface LED devices with FRDM kit.

A17492. MICROWAVE ENGINEERING AND DIGITAL COMMUNICATIONS LAB

Course Outcomes:

At the end of the course, the student should be able to:

C411.1	Explain and verify the characteristics of microwave devices
C411.2	Analyze radiation pattern of antenna.
C411.3	Identify and illustrate the scattering parameters of different microwave devices
C411.4	Demonstrate their knowledge in base band signaling schemes through implementation of FSK, PSK and DPSK
C411.5	Understand Multiplexing of two Band limited Signals through TDM.

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ELEMENTS OF CIVIL ENGINEERING (ECE)

COURSE OUTCOMES:
At the end of the course, the student should be able to:

C412.1	Understand Geological properties and Geotechnical aspect of civil engineering.
C412.2	Plan the concept of different building byelaws and planning principles.
C412.3	Analyse the concept of stress-strain and to identify the properties of the fluid changes treatment process.
C412.4	Apply modern tools of surveying and understand basic concepts of concrete.
C412.5	Evaluate the principles of highway geometric designs and types of pavements as per IRC standards.

INTRODUCTION TO EARTHQUAKE ENGINEERING(IEE)

COURSE OUTCOMES:
At the end of the course, the student should be able to:

C412.1	Understand the Interior Earth' surface, fault attenuation, different wave propagation in Earthquake events.
C412.2	Classify different earthquake hazards and its effects.
C412.3	Examine the mechanical behavior of earth surface and its significance.
C412.4	Evaluate the quantification of Hazard effects - approach methods.
C412.5	Predict the vibration motion and how it influences the earth's surface.

OPTIMIZATION TECHNIQUES (OT)

COURSE OUTCOMES:
At the end of the course, the student should be able to:

C412.1	Understanding the concepts of optimization techniques.
C412.2	Compute the minimum transportation cost by different methods.
C412.3	Analyzing the waiting lines in terms of Queuing theory parameters.
C412.4	Applying the costing principles in identifying the minimum inventory.
C412.5	Evaluating the simulation process for various OR models.

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MAINTENANCE AND SAFETY ENGINEERING (MSE)

Course Outcomes:
At the end of the course, the student should be able to:

C412.1	Understanding the need for maintenance of a machine in an industry.
C412.2	Identifying various maintenance policies.
C412.3	Analyzing the cost and time concepts while implementing the maintenance.
C412.4	Evaluating the quality concepts for safety and maintenance of an equipment
C412.5	Appreciating the terms reliability and maintainability with reference the maintenance of an equipment.

Information Systems for Engineers(ISE)(Open Elective)
Course Outcomes:
At the end of the course, the student should be able to:

C412.1	Understand the concepts of Information Systems.
C412.2	Evaluate the design, development and security of Information Systems
C412.3	Analyze the various modules in social issues while using Information Systems.
C412.4	Analyze the issues in data security
C412.5	Analyse the concept of ethics in information systems.

Web Design(Open Elective)
Course Outcomes
At the end of the course, the student should be able to:

C412.1	Create static web pages using HTML
C412.2	Design styles for HTML web pages
C412.3	Create interactive web pages using Javascript
C412.4	Develop web applications using server side scripting language-PHP
C412.5	Develop and analyze web applications with Java Server Pages

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IV B.TECH-II SEM

A18441. CELLULAR AND MOBILE COMMUNICATIONS
Course Outcomes
The student will be able

C413.1	To explain the concept of cell coverage for signal, traffic, and diversity techniques to design an antenna.
C413.2	To use frequency management, Channel assignment for the design of a cellular system.
C413.3	To analyze and design wireless and mobile cellular systems.
C413.4	To classify frequency management, Channel assignment and types of handoff and apply in the design of a cellular system.
C413.5	To understand the cell and base stations

A18442. DATA COMMUNICATIONS AND NETWORKING
Course Outcomes
Students will be able

C414.1	To understand and explore the basics of Computer Networks and Various Protocols.
C414.2	To explain the World Wide Web concepts.
C414.3	To administrate a network and flow of information.
C414.4	To understand easily the concepts of network security
C414.5	To understand Mobile and ad hoc networks

A18443. RADAR ENGINEERING
Course Outcomes:
At the end of the course the student should be able to

C415.1	Understand the concepts of radar fundamentals and analysis of the radar signals.
C415.2	Understand concept of different types of radar waveforms
C415.3	List and differentiate various radar transmitters and receivers.
C415.4	Relate and contrast the different types of radars like MTI, Doppler and tracking radars.
C415.5	Identify detection process of radar signals in noise.