PROGRAMME: ELECTRONICS AND COMMUNICATION ENGINEERING
JNTUK UNIVERSITY REGULATION R20
FIRST YEAR COURSES (I & II SEMISTER)
Course Outcome's (Co's)
I-I & I-II

C101	COMMUNICATIVE ENGLISH

Course Outcomes (Cos)

C101.1	1.Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
C101 .2	2. Ask and answer general questions on familiar topics and introduce oneself/others
C101 .3	3. Employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
C101.4	4. Recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
C101.5	Form sentences using proper grammatical structures and correct word forms

C102	MATHEMATICS-I

Course Outcomes (Cos)

C102.1	Utilize mean value theorems to real life problems (L3)
C102.2	Solve the differential equations related to various engineering fields (L3)
C102.3	Familiarize with functions of several variables which is useful in optimization (L3)
C102.4	Apply double integration techniques in evaluating areas bounded by region (L3)
C102.5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems (L5)

C103	APPLIED CHEMISTRY

Course Outcomes (Cos)

C103.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
C103.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
C103.3	Synthesize nano materials for modern advances of engineering technology. Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
C103.4	Analyze the principles of different analytical instruments and their applications. Design models for energy by different natural sources.
C103.5	Analyze the principles of different analytical instruments and their applications. Design models for energy by different natural sources.

C104	PROGRAMMING FOR PROBLEM SOLVING USING C

Course Outcomes (Cos)

C104.1	To write algorithms and to draw flowcharts for solving problems
C104.2	To convert flowcharts/algorithms to C Programs, compile and debug programs
C104.3	To use different operators, data types and write programs that use two-way/ multi-way selection
C104.4	To select the best loop construct for a given problem
C104.5	To design and implement programs to analyze the different pointer applications
C104.6	To decompose a problem into functions and to develop modular reusable code
C104.7	To apply file I/O operations

C105	ENGINEERING DRAWING & DESIGN

Course Outcomes (Cos)

C105.1	The student will learn how to visualize 2D & 3D objects.

C106	ENGLISH COMMUNICATION SKILLS LABORATORY

Course Outcomes (Cos)

C106.1	Vowels, Consonants, Pronunciation, Phonetic Transcription
C106.2	Word stress-di-syllabic words, poly-syllabic words, weak and strong forms
C106.3	Stress in compound words, rhythm, intonation, accent neutralization
C106.4	Listening to short audio texts and identifying the context and specific pieces of information to answer a series of questions in speaking
C106.5	Newspapers reading; Understanding and identifying key terms and structures useful for writing reports.

C107	APPLIED CHEMISTRY LAB

Course Outcomes (Cos)

C107.1	The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

C108	PROGRAMMING FOR PROBLEM SOLVING USING C LAB (ES1202)

Course Outcomes (Cos)

C108.1	Gains Knowledge on various concepts of a C language
C108.2	Draw flowcharts and write algorithms.
C108.3	Design and development of C problem solving skills.
C108.4	Design and develop modular programming skills.
C108.5	Trace and debug a program

C109	MATHEMATICS-II (Linear Algebra and Numerical Methods)

Course Outcomes (Cos)

C109.1	Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
C109.2	estimate the work done against a field, circulation and flux using vector calculus (L5)
C109.3	apply the Laplace transform for solving differential equations (L3)
C109.4	find or compute the Fourier series of periodic signals (L3)
C109.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
C109.6	identify solution methods for partial differential equations that model physical preprocesses(L3)

C1010	Applied Physic

Course Outcomes (Cos)

C110.1	n the need of coherent sources and the conditions for sustained interference (L2) Identify engineering applications of interference (L3)¬ Analyze the differences between interference and diffraction with applications (L4)¬ Illustrate the concept of polarization of light and its applications (L2)¬ Classify ordinary polarized light and extraordinary polarized light (L2)
C110.2	Understand the basic concepts of LASER light Sources (L2) Apply the concepts to learn the types of lasers (L3)¬ Identifies the Engineering applications of lasers (L2)¬ Explain the working principle of optical fibers (L2)¬ Classify optical fibers based on refractive index profile and mode of propagation (L2)¬ Identify the applications of optical fibers in various fields (L2)
C110.3	Explain the concept of dual nature of matter (L2) Understand the significance of wave function (L2)¬ Interpret the concepts of classical and quantum free electron theories (L2)¬ Explain the importance of K-P model¬ Classify the materials based on band theory (L2)¬ Apply the concept of effective mass of electron (L3)
C110.4	Explain the concept of dielectric constant and polarization in dielectric materials (L2) Summarize various types of polarization of dielectrics (L2)¬ Interpret Lorentz field and Claussius-Mosotti relation in dielectrics(L2)¬ Classify the magnetic materials based on

	susceptibility and their temperature¬ dependence (L2) Explain the applications of dielectric and magnetic materials (L2)¬ Apply the concept of magnetism to magnetic data storage devices (L3)¬
C110.5	Classify the energy bands of semiconductors (L2) Interpret the direct and indirect band gap semiconductors (L2)¬ Identify the type of semiconductor using Hall effect (L2)¬ Identify applications of semiconductors in electronic devices (L2)¬ Classify superconductors based on Meissen's effect (L2)¬ Explain Meissen's effect, BCS theory¬

C111	Object Oriented Programming through Java ROUGH C

Course Outcomes (Cos)

C111.1	Show competence in the use of the Java programming language in the development of small to medium- sized application programs that demonstrate professionally acceptable coding and performance standard
C111.2	Illustrate the basic principles of the object-oriented programming
C111.3	Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming

C112	NETWORK ANALYSIS

Course Outcomes (Cos)

C112.1	gain the knowledge on basic network elements
C112.2	will analyze the RLC circuits behavior in detailed
C112.3	Analyze the performance of periodic waveforms.
C112.4	gain the knowledge in characteristics of two port network parameters (Z,Y,ABCD,h&g)
C112.5	analyze the filter design concepts in real world applications

C113	BASIC ELECTRICAL ENGINEERING

Course Outcomes (Cos)

C113.1	Able to explain the operation of DC generator and analyze the characteristics of DC generator.
C113.2	Able to explain the principle of operation of DC motor and analyze their characteristics. Acquire the skills to analyze the starting and speed control methods ofDCmotors
C113.3	Ability to analyze the performance and speed – torque characteristics of a3- phase induction motor and understand starting methods of 3- phase induction motor
C113.4	Able to explain the operation of Synchronous Machines
C113.5	Capability to understand the operation of various special machines

C114	ELECTRONIC WORKSHOP LAB

Course Outcomes (Cos)

C114.1	Identification of components:
C114.2	Laboratory equipment
C114.3	Soldering practice
C114.4	Testing of Components
C114.5	Measurements on CRO

C1015	BASIC ELECTRICAL ENGINEERING LAB

Course Outcomes (Cos)

C1015.1	Determine and predetermine the performance of DC machine sand b transformer
C1015.2	Control the DC shunt machines
C1015.3	Compute the performance of1-phasetransformer.
C1015.4	Perform tests on 3-phase induction motor and alternator to determine their performance characteristics

C1016	APPLIED PHYSICS LABORATORY

Course Outcomes (Cos)

C1016.1	Determination of radius of curvature of a given Plano convex lens by Newton's rings.
C1016.2	Determination of dielectric constant using charging and discharging method.
C1016.3	Estimation of Planck's constant using photoelectric effect
C1016.4	. Determination of Hall voltage and Hall coefficient of a given semiconductor using Hall Effect
C1016.5	4. Measurement of resistance of a semiconductor with varying temperature

C117	ENVIRONMENTAL SCIENCE

Course Outcomes (Cos)

C117.1	The student will learn how to visualize 2D & 3D object

PROGRAMME: ELECTRONICS AND COMMUNICATION ENGINEERING
JNTUK UNIVERSITY REGULATION R20
SECOND YEAR COURSES (I & II SEMISTER)
Course Outcome's (Co's)
II-I & II-II

C201	ELECTRONIC DEVICES AND CIRCUITS

Course Outcomes (Cos)

C201.1	Understand the basic concepts of semiconductor physics.
C201.2	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
C201.3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons.
C201.4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
C201.5	Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
C201.6	Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations.

C202	SWITCHING THEORYAND LOGIC DESIGN

Course Outcomes (Cos)

C202.1	Classify different number systems and apply to generate various codes
C202.2	Use the concept of Boolean algebra in minimization of switching functions
C202.3	Design different types of combinational logic circuits
C202.4	Apply knowledge of flip-flops in designing of Registers and counters
C202.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines
C202.6	Produce innovative designs by modifying the traditional design techniques

C203	SIGNALS AND SYSTEMS

Course Outcomes (Cos)

C203.1	Differentiate the various classifications of signals and systems
C203.2	Analyze the frequency domain representation of signals using Fourier concepts
C203.3	Classify the systems based on their properties and determine the response ofLTISystems
C203.4	Know the sampling process and various types of sampling techniques.
C203.5	Apply Laplace and z-transforms to analyze signals and Systems (continuous&discrete)

C204	RANDOM VARIABLES AND STOCHASTIC PROCESSES

Course Outcomes (Cos)

C204.1	Mathematically model her and omphenomena and solve simple probabilistic problems.
C204.2	Identify different types of random variables and compute statistical averages of the Sarandon variables.
C204.3	Characterize the random processes in the time and frequency domains
C204.4	Analyze the LTI systems with random inputs

C205	MATHEMATICS-IV (Complex Variables and Statistical Methods)

Course Outcomes (Cos)

C205.1	apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
C205.2	find the differentiation and integration of complex functions used in engineering problems (L5)
C205.3	make use of the Cauchy residue theorem to evaluate certain integrals (L3)
C205.4	apply discrete and continuous probability distributions (L3)
C205.5	design the components of a classical hypothesis test (L6)
C201.6	infer the statistical inferential methods based on small and large sampling tests (L4)

C206	OOPS THROUGH JAVA LAB

Course Outcomes (Cos)

C206.1	Identify classes, objects, members of a class and the relationship among the mended for a specific problem
C206.2	Implement program stodisting uishdifferent form so fin heritance
C206.3	Create package sand to reuse them
C206.4	Develop programs using Exception Handling mechanism
C206.5	Develop multi threaded application using synchronization concept.

C207	ELECTRONIC DEVICES AND CIRCUITS LAB

Course Outcomes (Cos)

C207.1	Analyze the characteristics of diodes, transistors and other devices
C207.2	Design and implement the rectifier circuits, SCR and UJT in the hardware circuits
C207.3	Design and implement the rectifier circuits, SCR and UJT in the hardware circuits
C207.4	Measure electrical quantities using CRO in the experimentation.

C208	PYTHON LAB (SKILL ORIENTED COURSE

Course Outcomes (Cos)

C208.1	Know comprehensions, generators in python.CO2: Know exception handling in python
C208.2	Know file I/O
C208.3	Understand various data types like lists, tuples, strings etc
C208.4	Know the usage of various pre-defined functions on the above data types

C209	SWITCHING THEORY AND LOGIC DESIGN LAB

Course Outcomes (Cos)

C209.1	Implement basic gates using IC like 7400 series
C209.2	Implement Universal gates
C209.3	Implement the combinational logic circuits
C209.4	Implement the sequential logic circuits like counters and registers

C2010	ELECTRONIC CIRCUIT ANALYSIS

Course Outcomes (Cos)

C210.1	Design and analysis of small signal high frequency transistor amplifier using BJT and FET.
C210.2	Design and analysis of multistage amplifiers using BJT and FET and Differential amplifier using BJT
C210.3	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept
C210.4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability conceptS

C211	DIGITAL IC DESIGN

Course Outcomes (Cos)

C211.1	Understand the structure of commercially available digital integrated circuit families
C211.2	Learn the IEEE Standard 1076 Hardware Description Language (VHDL).
C211.3	Model complex digital systems at several levels of abstractions, behavioral, structural, and rapid system prototyping.
C211.4	Analyze and design basic digital circuits with combinatorial and sequential logic circuits using VHDL

C211	ANALOG COMMUNICATIONS

Course Outcomes (Cos)

C211.1	Differentiate various Analog modulation and demodulation schemes and their spectral characteristics
C211.2	Analyze noise characteristics of various analog modulation methods
C211.3	Analyze various functional blocks of radio transmitters and receivers
C211.4	Design simple analog systems for various modulation techniques

C212	LINEAR CONTROL SYSTEMS

Course Outcomes (Cos)

C212.1	This course introduces the concepts of feedback and its advantages to various control systems
C212.2	The performance metrics to design the control system in time-domain and frequency domain are introduced
C212.3	Control systems for various applications can be designed using time-domain and frequency domain analysis.
C212.4	In addition to the conventional approach, the state space approach for the analysis of control systems is also introduced

C213	MANAGEMENT AND ORGANISATIONAL BEHAVIOUR

Course Outcomes (Cos)

C213.1	After completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational structure.
C213.2	Will familiarize with the concepts of functional management that is HR Mand Marketing of new product development
C213.3	The learner sable to think in strategically through contemporary management practices.
C213.4	The learner can develop positive attitude through personality development and can equip with motivational theories
C213.5	The student can attain the group performance and grievance handling in managing the organizational culture

C214	ELECTRONIC CIRCUIT ANALYSIS LAB

Course Outcomes (Cos)

C214.1	The students are required to design the circuit and perform the simulation using Multisim / Equivalent Industrial Standard Licensed simulation software tool..
C214.2	Further they are required to verify the result using necessary hardware equipment

C215	ANALOG COMMUNICATIONS LAB

Course Outcomes (Cos)

C215.1	The students have to calculate the relevant parameters
C215.2	Amplitude Modulation - Modulation & Demodulation B. AM – DSBSC - Modulation & Demodulation C. Spectrum Analysis of Modulated signal using Spectrum Analyzer
C215.3	Operating system (Windows/Linux software) iv) Simulations software (Simulink & MATLAB)
C215.4	Verify simulation outputs

C216	DIGITAL IC DESIGN LAB

Course Outcomes (Cos)

C216.1	The students are required to design and draw the internal logical structure of the following Digital Integrated Circuits and to develop VHDL/Virology HDL Source code
C216.2	Perform simulation using relevant simulator and analyze the obtained simulation results using necessary synthesizer.
C216.4	,All the experiments are required to verify and implement the logical operations on the latest FPGA Hardware in the Laboratory.

PROGRAMME: ELECTRONICS AND COMMUNICATGION ENGINEERING
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THIRD YEAR COURSES (I & II SEMISTER)
Course Outcome's (Co's)
III-I & III-II

C301	ANALOG ICS AND APPLICATIONS

Course Outcomes (Cos)

C301.1	Describe the Op-Amp and internal Circuitry: 555 Timer, PLL
C301.2	Discuss the Applications of Operational amplifier: 555 Timer, PLL
C301.3	Design the Active filters using Operational Amplifier
C301.4	Use the Op-Amp in A to D & D to A Converters

C302	ELECTROMAGNETIC WAVES AND TRANSMISSION LINES

Course Outcomes (Cos)

C302.1	Determine E and H using various laws and applications of electric & magnetic fields
C302.2	Apply the Maxwell equations to analyze the time varying behavior of EM waves
C302.3	Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media
C302.4	Calculate Brewster angle, critical angle and total internal reflection
C302.5	Derive and Calculate the expressions for input impedance of transmission lines, reflection coefficient, VSWR etc. using smith chart

C303	DIGITAL COMMUNICATIONS

Course Outcomes (Cos)

C303.1	Analyze the performance of a Digital Communication System for probability of error and are able to design a digital communication system
C303.2	Analyze various source coding techniques.
C303.3	Compute and analyze Block codes, cyclic codes and convolution codes
C303.4	Design a coded communication system

C304	Data Structures

Course Outcomes (Cos)

C304.1	Summarize the properties, interfaces, and behaviors of basic abstract data types
C304.2	Discuss the computational efficiency of the principal algorithms for sorting & searchin
C304.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs
C304.4	Demonstrate different methods for traversing trees

C305	ANTENNA AND WAVE PROPAGATION (PE1)

Course Outcomes (Cos)

C305.1	Identify basic antenna parameters
C305.2	Design and analyze wire antennas, loop antennas, reflector antennas, lens antennas, horn antennas and micro-strip antennas
C305.3	Quantify the fields radiated by various types of antennas
C305.4	Design and analyze antenna arrays
C305.5	Analyze antenna measurements to assess antenna's performance
C305.6	Identify the characteristics of radio wave propagation

C306	ANALOG ICs AND APPLICATIONS LAB

Course Outcomes (Cos)

C306.1	Design various applications using op-amp
C306.2	Design various applications with 555 timer IC
C306.3	Deign various sequential and combinational circuits
C306.5	Use the Components:- IC741, IC555, IC565, IC1496, IC723, 7805, 7809, 7912 and other essential components
C306.4	Student have an ability of Analog IC Testing capability

C307	DIGITAL COMMUNICATIONS LAB

Course Outcomes (Cos)

C307.1	Student able to TDM,FDM and CDM
C307.2	Understand working of waveform coding like Shannon and Huffman coding
C307.3	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.
C307.4	Analyze the performance of a modulating signal and pass band in DC SYSTEM in terms error rate and efficiency

C308	DATA STRUCTURES USING JAVA LAB

Course Outcomes (Cos)

C308.1	To develop programming skills with a systematic approach in organizing and debugging programs in JAVA
C308.2	To implement data structures for problem solving
C308.3	To implement and analyze the searching algorithms in the context of specific engineering problems
C308.4	Write Java programs to implement the deque (double ended queue) ADT using (a) Array (b) Doubly linked list
C308.5	Write Java programs for implementing the following sorting methods: (a) Bubble sort (b) Selection sort (c) Insertion sort (d) Radix sort
C308.6	Write a Java program for implementing KMP pattern matching algorithm

C309	MICROPROCESSORS AND MICROCONTROLLERS

Course Outcomes (Cos)

C309.1	Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.
C309.2	Analyses the instruction sets - addressing modes - minimum and maximum modes operations of 8086 Microprocessors
C309.3	Analyses the Microcontroller and interfacing capability
C309.4	Describe the architecture and interfacing of 8051 controller
C309.5	Know the concepts of PIC micro controller and its programming.

C310	ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

Course Outcomes (Cos)

C310.1	Know the construction and working of various types of analog instruments.
C310.2	Describe the construction and working of wattmeter and power factor meters
C310.3	Know the construction and working various bridges for the measurement resistance - inductance and capacitance
C310.4	Know the operational concepts of various transducers
C310.5	Know the construction and operation digital meters

C311	VLSI DESIGN

Course Outcomes (Cos)

C311.1	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
C311.2	Apply the design Rules and draw layout of a given logic circui
C311.3	Design basic building blocks in Analog IC design
C311.4	Analyze the behavior of amplifier circuits with various loads
C311.5	Design various CMOS logic circuits for design of Combinational logic circuits.
C311.6	Design MOSFET based logic circuits using various logic styles like static and dynamic CMOS
C312.7	Design various applications using FPGA.

C312	DIGITAL SIGNAL PROCESSING

Course Outcomes (Cos)

C312.1	Apply the difference equations concept in the analysis of Discrete time systems
C312.2	Use the FFT algorithm for solving the DFT of a given signal
C312.3	Design a Digital filter (FIR&IIR) from the given specifications
C312.4	Realize the FIR and IIR structures from the designed digital filter
C312.5	Use the MultiMate Processing concepts in various applications (eg: Design of phase shifters, Interfacing of digital systems
C312.6	Apply the signal processing concepts on DSP Processor

C313	MICROWAVE ENGINEERING (PE2)

Course Outcomes (Cos)

C313.1	Design different modes in waveguide structures
C313.2	Design different modes in waveguide structures 2. Calculate S-matrix for various waveguide components and splitting the microwave energy in a desired direction
C313.3	Distinguish between Microwave tubes and Solid State Devices, calculation of efficiency of devices
C313.4	Measure various microwave parameters using a Microwave test benc

C314	COMPUTER NETWORKS

Course Outcomes (Cos)

C314.1	Demonstrate different network models for networking links OSI, TCP/IP, B-ISDN, N-BISDN and get knowledge about various communication techniques, methods and protocol standards
C314.2	Discuss different transmission media and different switching networks.
C314.3	Discuss different transmission media and different switching networks
C314.4	Analyze data link layer services, functions and protocols like HDLC and PPP
C314.5	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
C314.6	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc

C315	MICROPROCESSOR AND MICROCONTROLLERS LAB

Course Outcomes (Cos)

C315.1	Design the Programs for 16 -bit arithmetic operations (using Various Addressing Modes). a. Addition of n-BCD numbers. b. Multiplication and Division operations
C315.2	design a Interfacing stepper motor to8086
C315.3	Design the number of 1's and number of 0's in a given 8-bit number
C315.4	Design a Program and verify Timer/ Counter in8051
C315.5	Design a program to toggle LED every second using timer interrupt.

C316	VLSI DESIGN LAB

Course Outcomes (Cos)

C316.1	Design and Implement 4-bit ripple carry and carry look ahead adder using behavioral, dataflow and structural modeling
C316.2	Design and Implement 8-bit parity generator and checker
C316.3	Design and Implement a 4-bit sequence detector through Mealy and Moore state machines.
C316.4	Design and Implement a D-Flip-flop

C317	DIGITAL SIGNAL PROCESSING LAB

Course Outcomes (Cos)

C317.1	Design a Linear Convolution of two DT signals a) Using MATLAB b) Using Code Composer Studio(CCS)
C317.2	Computation of Discrete Fourier Transform(DFT) and Inverse Discrete Fourier Transform (IDFT) a) Using MATLAB b) Using Code Composer Studio(CCS)
C317.3	Generation of a sinusoidal signal.
C317.4	Verification of sampling theorem.
C317.5	Implementation of FFT algorithm

C318	ARM BASED/ AURDINO BASED PROGRAMMING

Course Outcomes (Cos)

C3018.1	Comprehend Microcontroller-Transducers Interface techniques
C3018.2	Establish Serial Communication link with Arduino
C3018.3	Analyze basics of SPI interface
C3018.4	Interface Stepper Motor with Arduino
C3018.5	Analyze Accelerometer interface technique

PROGRAMME: ELECTRONICS AND COMMUNICATION ENGINEERING
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FOURTH YEAR COURSES (I & II SEMISTER)
Course Outcome's (Co's)
IV-I & IV-II

C401	Optical Communication PE 3:

Course Outcomes (Cos)

C401.1	Choose necessary components required in modern optical communications systems.
C401.2	Design and build optical fiber experiments in the laboratory, and learn how to calculate electromagnetic modes in waveguides, the amount of light lost going through an optical system, dispersion of optical fibers.
C401.3	Use different types of photo detectors and optical test equipment to analyze optical fiber and light wave systems
C401.4	Choose the optical cables for better communication with minimum losses
C401.5	Design, build, and demonstrate optical fiber experiments in the laboratory

C402	Satellite Communications PE4:

Course Outcomes (Cos)

C402.1	Understand the concepts, applications and subsystems of Satellite communications
C402.2	Derive the expression for G/T ratio and to solve some analytical problems on satellite link design
C402.3	Understand the various types of multiple access techniques and architecture of earth station design
C402.4	Understand the concepts of GPS and its architecture

C403	Radar engineering PE5

Course Outcomes (Cos)

C403.1	Derive the radar range equation and to solve some analytical problem
C403.2	Understand the different types of radars and its applications
C403.3	Understand the concept of tracking and different tracking techniques.
C403.4	Understand the various components of radar receiver and its performance

C404	Introduction to Internet of Things

Course Outcomes (Cos)

C404.1	Understand internet of Things and its hardware and software components
C404.2	Interface I/O devices, sensors & communication modules.
C404.3	Remotely monitor data and control devices.
C404.4	Design real time IOT based application

C405	Cryptography & Network Security

Course Outcomes (Cos)

C404	Introduction to Internet of Things
404	Introduction to Internet of Things
405.1	Apply the knowledge of symmetric cryptography to implement encryption and decryption using Cease Cipher, Substitution Cipher, Hill Cipher
C405.2	Demonstrate the different algorithms like DES, Blowfish, and Rijndael; encrypt the text "Hello world" using Blowfish Algorithm.
C405.3	Analyze and implement public key algorithms like RSA, Diffie-Hellman Key Exchange mechanism, the message digest of a text using the SHA-1 algorithm

C406	Humanities and Social Science Elective

Course Outcomes (Cos)

C406.1	By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
C406.2	They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society
C406.3	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
C406.4	faculty-student or mentor-mentee programs throughout their time with the institution
C406.5	Higher level courses on human values in every aspect of living. E.g. as a professional

C407	PROJECT WORK

Course Outcomes (Cos)

C407.1	**On the completion of project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology**