



### List of B.Tech Program Outcomes(POs)

| S.No | Name of the Out Come                                  | Explanation  |
|------|---|--|
| 1    | <b>PO1: Engineering knowledge</b>                     | Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.  |
| 2    | <b>PO2: Problem analysis</b>                          | Identify, articulate, review research literature, and analyze complex engineering problems to reach reasoned conclusions using first principles in mathematics, science, and engineering.  |
| 3    | <b>PO3:Design/development of solutions</b>            | Design solutions to complex technical problems and design system components or processes to meet identified needs with due consideration of public health and safety, as well as cultural, social and environmental considerations.                                  |
| 4    | <b>PO4:Conduct investigations of complex problems</b> | Use science-based knowledge and research methods, including experimental design, data analysis and interpretation, and data synthesis, to draw valid conclusions.  |
| 5    | <b>PO5: Modern tool usage</b>                         | Create, select and apply appropriate techniques, resources and modern engineering and IT tools to complex engineering activities, including forecasting and modeling, with an understanding of constraints.  |
| 6    | <b>PO6: The engineer and society</b>                  | Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice   |
| 7    | <b>PO7: Environment and sustainability</b>            | Understand the impact of professional design solutions on social and environmental relations and shows the knowledge and need for sustainable development  |
| 8    | <b>PO8: Ethics</b>                                    | Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice  |
| 9    | <b>PO9: Individual and team work</b>                  | Works effectively both as an individual and as a member or leader in diverse groups and multidisciplinary environments   |
| 10   | <b>PO10: Communication</b>                            | Effectively communicate complex project tasks with the engineering community and society at large, including the ability to understand and write effective reports and project documentation, make effective presentations, and give and receive clear instructions. |
| 11   | <b>PO11: Project management and finance</b>           | Demonstrates knowledge and understanding of planning and management principles and applies them in their work as a team member and leader, in project management and in multidisciplinary environments.  |
| 12   | <b>PO12: Life-long learning</b>                       | Recognize the need for independent and lifelong learning and the preparation and ability to participate in it in the wider context of technological change   |



Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

**2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website**

**JNTUA - R19 Regulation - Course Outcomes**

| S.No | Name of the Department                  | Page No |
|------|---|---------|
| 1    | Electronics & Communication Engineering | 2 - 23  |
| 2    | Electrical & Electronics Engineering    | 24 - 44 |
| 3    | Computer Science & Engineering          | 45 - 63 |

**Note:** All the Course Outcomes given in this document are as famed by JNTUA.



Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

# DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING



| <b>COURSE OUTCOMES</b>            |                               |                     | <b>REGULATION: R19</b>                               |  |
|-----------------------------------|-------------------------------|---------------------|--|--|
| <b>YEAR/SEM: I B.TECH - I SEM</b> |                               |                     | <b>BRANCH: ECE</b>                                   |  |
| <b>S.No</b>                       | <b>Subject Name</b>           | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                 | Algebra and Calculus          | 19A54101            | <b>CO1</b>   | Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.   |
|                                   |                               |                     | <b>CO2</b>   | Utilize mean value theorems to real life problems.   |
|                                   |                               |                     | <b>CO3</b>   | Familiarize with functions of several variables which is useful in optimization.   |
|                                   |                               |                     | <b>CO4</b>   | Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems. |
|                                   |                               |                     | <b>CO5</b>   | Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions.                        |
| 2                                 | Applied Physics               | 19A56101T           | <b>CO1</b>   | Identify the wave properties of light and the interaction of energy with the matter.   |
|                                   |                               |                     | <b>CO2</b>   | Apply electromagnetic wave propagation in different guided media.  |
|                                   |                               |                     | <b>CO3</b>   | Asses the electromagnetic wave propagation and its power in different media.   |
|                                   |                               |                     | <b>CO4</b>   | Calculate conductivity of semiconductors.  |
|                                   |                               |                     | <b>CO5</b>   | Interpret the difference between normal conductor and superconductor.  |
|                                   |                               |                     | <b>CO6</b>   | Demonstrate the application of nano materials.   |
| 3                                 | Problem Solving & Programming | 19A05101T           | <b>CO1</b>   | Construct his own computer using parts.  |
|                                   |                               |                     | <b>CO2</b>   | Recognize the importance of programming language independent constructs.   |
|                                   |                               |                     | <b>CO3</b>   | Solve computational problems.  |
|                                   |                               |                     | <b>CO4</b>   | Select the features of C language appropriate for solving a problem.   |
|                                   |                               |                     | <b>CO5</b>   | Design computer programs for real world problems.  |
|                                   |                               |                     | <b>CO6</b>   | Organize the data which is more appropriated for solving a problem.  |
| 4                                 | Communicative English - I     | 19A52101T           | <b>CO1</b>   | Understand the context, topic, and pieces of specific information from social or Transactional dialogues spoken by native speakers of English.   |
|                                   |                               |                     | <b>CO2</b>   | Apply grammatical structures to formulate sentences and correct word forms.  |
|                                   |                               |                     | <b>CO3</b>   | Analyze discourse markers to speak clearly on a  |



|   |  |           |            |  |
|---|--|-----------|------------|--|
|   |  |           |            | specific topic in informal discussions.  |
|   |  |           | <b>CO4</b> | Evaluate reading/listening texts and to write summaries based on global.                         |
|   |  |           | <b>CO5</b> | Create a coherent paragraph interpreting a figure/graph/chart/table.                             |
| 5 | Electronics & Communication Engineering Workshop | 19A04101  | <b>CO1</b> | Identify discrete components and ICs.  |
|   |  |           | <b>CO2</b> | Assemble simple electronic circuits over a PCB.  |
|   |  |           | <b>CO3</b> | Testing of various components.   |
|   |  |           | <b>CO4</b> | Interpret specifications (ratings) of the component.   |
|   |  |           | <b>CO5</b> | Demonstrate disassembling and assembling a Personal Computer and make the computer ready to use. |
|   |  |           | <b>CO6</b> | Make use of Office tools for preparing documents, spread sheets and presentations.               |
|   |  |           | <b>CO7</b> | Demonstrate working of various communication systems.  |
| 6 | Applied Physics Lab                              | 19A56101P | <b>CO1</b> | Operate optical instruments like microscope and spectrometer.                                    |
|   |  |           | <b>CO2</b> | Determine thickness of a hair/paper with the concept of interference.                            |
|   |  |           | <b>CO3</b> | Estimate the wavelength of different colors using diffraction grating and resolving Power.       |
|   |  |           | <b>CO4</b> | Plot the intensity of the magnetic field of circular coil carrying current with distance         |
|   |  |           | <b>CO5</b> | Evaluate the acceptance angle of an optical fiber and numerical aperture.                        |
|   |  |           | <b>CO6</b> | Determine magnetic susceptibility of the material and its losses by B-H curve.                   |
|   |  |           | <b>CO7</b> | Determine the resistivity of the given semiconductor using four probe method.                    |
|   |  |           | <b>CO8</b> | Identify the type of semiconductor i.e., n-type or p-type using hall effect.                     |
|   |  |           | <b>CO9</b> | Calculate the band gap of a given semiconductor.   |
| 7 | Problem Solving & Programming Lab                | 19A05101P | <b>CO1</b> | Construct a Computer given its parts.  |
|   |  |           | <b>CO2</b> | Select the right control structure for solving the problem.                                      |
|   |  |           | <b>CO3</b> | Analyze different sorting algorithms.  |
|   |  |           | <b>CO4</b> | Design solutions for computational problems.   |
|   |  |           | <b>CO5</b> | Develop C programs which utilize the memory efficiently using programming constructs.            |
| 8 | Communicative English - I Lab                    | 19A52101P | <b>CO1</b> | To remember and understand the different aspects of the English language proficiency with        |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |   |
|--|--|--|------------|---|
|  |  |  |            | emphasis on LSRW skills   |
|  |  |  | <b>CO2</b> | To apply communication skills through various language learning activities.   |
|  |  |  | <b>CO3</b> | To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension. |
|  |  |  | <b>CO4</b> | To evaluate and exhibit acceptable etiquette essential in social and professional settings  |
|  |  |  | <b>CO5</b> | To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                         |



| <b>COURSE OUTCOMES</b>             |  |                     | <b>REGULATION: R19</b>                               |   |
|------------------------------------|--|---------------------|--|---|
| <b>YEAR/SEM: I B.TECH - II SEM</b> |  |                     | <b>BRANCH: ECE</b>                                   |   |
| <b>S.No</b>                        | <b>Subject Name</b>                        | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |   |
| 1                                  | Network Theory                             | 19A04201T           | <b>CO1</b>   | Solve network problems using mesh and nodal analysis techniques.  |
|                                    |  |                     | <b>CO2</b>   | Analyze networks using Thevenin, Norton, Maximum power transfer, Superposition, Miller and Millman theorems.                |
|                                    |  |                     | <b>CO3</b>   | Compute responses of first order and second order networks using time & frequency domain analysis.                          |
|                                    |  |                     | <b>CO4</b>   | Design resonant circuits for given bandwidth.   |
|                                    |  |                     | <b>CO5</b>   | Utilize z, y, ABCD and h parameters for analyzing two port circuit behavior.  |
| 2                                  | Differential Equations and Vector Calculus | 19A54201            | <b>CO1</b>   | Solve the differential equations related to various engineering fields.   |
|                                    |  |                     | <b>CO2</b>   | Identify solution methods for partial differential equations that model physical Processes.                                 |
|                                    |  |                     | <b>CO3</b>   | Interpret the physical meaning of different operators such as gradient, curl and Divergence.                                |
|                                    |  |                     | <b>CO4</b>   | Estimate the work done against a field, circulation and flux using vector calculus.   |
| 3                                  | Chemistry                                  | 19A51102T           | <b>CO1</b>   | Compare the materials of construction for battery and electrochemical sensors.  |
|                                    |  |                     | <b>CO2</b>   | Explain the preparation, properties, and applications of thermoplastics & thermosettings, elastomers & conducting polymers. |
|                                    |  |                     | <b>CO3</b>   | Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.                           |
|                                    |  |                     | <b>CO4</b>   | Apply the principle of supramolecular chemistry in application of molecular machines and switches.                          |
| 4                                  | Data Structures                            | 19A05201T           | <b>CO1</b>   | Select Appropriate Data Structure for solving a real world problem.   |
|                                    |  |                     | <b>CO2</b>   | Select appropriate file organization technique depending on the processing to be done.                                      |
|                                    |  |                     | <b>CO3</b>   | Construct Indexes for Databases.  |
|                                    |  |                     | <b>CO4</b>   | Analyse the Algorithms.   |
|                                    |  |                     | <b>CO5</b>   | Develop Algorithm for Sorting large files of data.  |
| 5                                  | Engineering Workshop                       | 19A03101            | <b>CO1</b>   | Apply wood working skills in real world applications.   |





Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                          |           |            |  |
|---|--------------------------|-----------|------------|--|
|   |                          |           | <b>CO2</b> | Build different parts with metal sheets in real world applications.    |
|   |                          |           | <b>CO3</b> | Apply fitting operations in various applications.                      |
|   |                          |           | <b>CO4</b> | Apply different types of basic electric circuit connections.           |
|   |                          |           | <b>CO5</b> | Demonstrate soldering and brazing.                                     |
| 6 | Engineering Graphics Lab | 19A03102  | <b>CO1</b> | Draw various curves applied in engineering.                            |
|   |                          |           | <b>CO2</b> | Show projections of solids and sections graphically.                   |
|   |                          |           | <b>CO3</b> | Draw the development of surfaces of solids.                            |
|   |                          |           | <b>CO4</b> | Use computers as a drafting tool.                                      |
|   |                          |           | <b>CO5</b> | Draw isometric and orthographic drawings using CAD packages.           |
| 7 | Network Theory Lab       | 19A04201P | <b>CO1</b> | Verify Kirchoff's laws and network theorems.                           |
|   |                          |           | <b>CO2</b> | Measure time constants of RL & RC circuits.                            |
|   |                          |           | <b>CO3</b> | Analyze behavior of RLC circuit for different cases.                   |
|   |                          |           | <b>CO4</b> | Design resonant circuit for given specifications.                      |
|   |                          |           | <b>CO5</b> | Characterize and model the network in terms of all network parameters. |
| 8 | Chemistry Lab            | 19A51102P | <b>CO1</b> | Determine the cell constant and conductance of solutions.              |
|   |                          |           | <b>CO2</b> | Prepare advanced polymer materials.                                    |
|   |                          |           | <b>CO3</b> | Measure the strength of an acid present in secondary batteries.        |
|   |                          |           | <b>CO4</b> | Analyse the IR and NMR of some organic compounds.                      |
| 9 | Data Structures Lab      | 19A05201P | <b>CO1</b> | Select the data structure appropriate for solving the problem.         |
|   |                          |           | <b>CO2</b> | Implement searching and sorting algorithms.                            |
|   |                          |           | <b>CO3</b> | Design new data types.   |
|   |                          |           | <b>CO4</b> | Illustrate the working of stack and queue.                             |
|   |                          |           | <b>CO5</b> | Organize the data in the form of files.                                |





| <b>COURSE OUTCOMES</b>             |   |                     | <b>REGULATION: R19</b>                               |   |
|------------------------------------|---|---------------------|--|---|
| <b>YEAR/SEM: II B.TECH - I SEM</b> |   |                     | <b>BRANCH: ECE</b>                                   |   |
| <b>S.No</b>                        | <b>Subject Name</b>                         | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |   |
| 1                                  | Complex variables and Transforms            | 19A54302            | <b>CO1</b>   | Understand the analyticity of complex functions and conformal mappings.   |
|                                    |   |                     | <b>CO2</b>   | Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours.  |
|                                    |   |                     | <b>CO3</b>   | Understand the usage of Laplace Transforms, Fourier Transforms and Z transforms.  |
|                                    |   |                     | <b>CO4</b>   | Evaluate the Fourier series expansion of periodic functions.  |
| 2                                  | Signals & Systems                           | 19A04302T           | <b>CO1</b>   | Understand the mathematical description and representation of continuous-time and discrete-time signals and systems. Also understand the concepts of various transform techniques.  |
|                                    |   |                     | <b>CO2</b>   | Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.   |
|                                    |   |                     | <b>CO3</b>   | Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.   |
|                                    |   |                     | <b>CO4</b>   | Classify the systems based on their properties and determine the response of them.  |
| 3                                  | Electronic Devices and Circuits             | 19A04302T           | <b>CO1</b>   | Understand principle, operation, characteristics and applications of Bipolar Junction Transistor and Field Effect Transistor.   |
|                                    |   |                     | <b>CO2</b>   | Describe basic operation and characteristics of various semiconductor devices.  |
|                                    |   |                     | <b>CO3</b>   | Analyze diode circuits for different applications such as rectifiers, clippers and clampers also analyze low frequency and high frequency models of BJT and FET.  |
|                                    |   |                     | <b>CO4</b>   | Design various biasing circuits for BJT and FET.  |
|                                    |   |                     | <b>CO5</b>   | Compare the performance of various semiconductor devices.   |
| 4                                  | Probability Theory and Stochastic Processes | 19A04304            | <b>CO1</b>   | Understanding the concepts of Probability, Random Variables, Random Processes and their characteristics learn how to deal with multiple random variables, conditional probability, joint distribution and statistical independence. |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                                      |           |            |   |
|---|--------------------------------------|-----------|------------|---|
|   |                                      |           | <b>CO2</b> | Formulate and solve the engineering problems involving random variables and random processes.   |
|   |                                      |           | <b>CO3</b> | Analyze various probability density functions of random variables.  |
|   |                                      |           | <b>CO4</b> | Derive the response of linear system for Gaussian noise and random signals as inputs.   |
| 5 | Digital Electronics and Logic Design | 19A04304  | <b>CO1</b> | Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.                   |
|   |                                      |           | <b>CO2</b> | Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families.          |
|   |                                      |           | <b>CO3</b> | Design combinational and sequential logic circuits.   |
|   |                                      |           | <b>CO4</b> | Compare different types of Programmable logic devices and logic families.   |
| 6 | Electrical Technology                | 19A02304T | <b>CO1</b> | Able to calculate the e.m.f. generated on DC Generator also able to control speed of different DC motors.   |
|   |                                      |           | <b>CO2</b> | Able to conduct open circuit and short circuit tests on single phase transformer for knowing their characteristics.                                   |
|   |                                      |           | <b>CO3</b> | Able to analyse three phase circuits, three induction motor operating principle and know their torque slip characteristics.                           |
|   |                                      |           | <b>CO4</b> | Able to have knowledge on synchronous machine with which he/she can able to apply the above conceptual things to real-world problems and applications |
| 7 | Electronic Devices and Circuits Lab  | 19A04302P | <b>CO1</b> | Understand the basic characteristics and applications of basic electronic devices.  |
|   |                                      |           | <b>CO2</b> | Observe the characteristics of electronic devices by plotting graphs.   |
|   |                                      |           | <b>CO3</b> | Analyze the Characteristics of UJT, BJT, FET, and SCR.  |
|   |                                      |           | <b>CO4</b> | Design FET based amplifier circuits/BJT based amplifiers for the given specifications.  |
|   |                                      |           | <b>CO5</b> | Simulate all circuits in PSPICE /Multisim.  |
| 8 | Basic Simulation Lab                 | 19A04305  | <b>CO1</b> | Understand the basic concepts of programming in MATLAB and explain use of built-in functions to perform assigned task.                                |
|   |                                      |           | <b>CO2</b> | Generate signals and sequences, Input signals to the systems to perform various   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                           |           |            |   |
|----|---------------------------|-----------|------------|---|
|    |                           |           |            | Operations.   |
|    |                           |           | <b>CO3</b> | Analyze signals using Fourier, Laplace and Z-transforms.  |
|    |                           |           | <b>CO4</b> | Compute Fourier transform of a given signal and plot its magnitude and phase spectrum.  |
|    |                           |           | <b>CO5</b> | Verify Sampling theorem, Determine Convolution and Correlation between signals and sequences.   |
| 9  | Electrical Technology Lab | 19A02304P | <b>CO1</b> | To understand various characteristics of DC generators and DC motors  |
|    |                           |           | <b>CO2</b> | To predetermine the efficiency and regulation of a 1- $\phi$ transformer.   |
|    |                           |           | <b>CO3</b> | To know power measurement in 3- $\phi$ circuits.  |
|    |                           |           | <b>CO4</b> | To understand various characteristics of Induction motors, Synchronous machines.  |
| 10 | Biology for Engineers     | 19A99302  | <b>CO1</b> | Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.         |
|    |                           |           | <b>CO2</b> | Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry. |
|    |                           |           | <b>CO3</b> | Briefly about human physiology.   |
|    |                           |           | <b>CO4</b> | Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.           |



| <b>COURSE OUTCOMES</b>              |  |                     | <b>REGULATION: R19</b>                               |  |
|-------------------------------------|--|---------------------|--|--|
| <b>YEAR/SEM: II B.TECH - II SEM</b> |  |                     | <b>BRANCH: ECE</b>                                   |  |
| <b>S.No</b>                         | <b>Subject Name</b>                          | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                   | Electromagnetic Waves and Transmission lines | 19A04401            | <b>CO1</b>   | Explain basic laws of electromagnetic fields and know the wave concept.  |
|                                     |  |                     | <b>CO2</b>   | Solve problems related to electromagnetic fields.  |
|                                     |  |                     | <b>CO3</b>   | Analyze electric and magnetic fields at the interface of different media.  |
|                                     |  |                     | <b>CO4</b>   | Derive Maxwell's equations for static and time varying fields.   |
|                                     |  |                     | <b>CO5</b>   | Analogy between electric and magnetic fields.  |
|                                     |  |                     | <b>CO6</b>   | Describes the transmission lines with equivalent circuit and explain their characteristic with various lengths.  |
| 2                                   | Electronic Circuits – Analysis and Design    | 19A04402T           | <b>CO1</b>   | Understand the working principle of multistage amplifiers, Feedback amplifiers, power amplifiers, tuned amplifiers, Multivibrator and Time base generators.  |
|                                     |  |                     | <b>CO2</b>   | Analyse multistage amplifiers, multistage amplifiers, feedback amplifiers, power amplifiers, tuned amplifier and Multivibrators.   |
|                                     |  |                     | <b>CO3</b>   | Design multistage amplifiers, feedback amplifiers, oscillators, Multivibrator, power amplifiers and tuned amplifiers for given specification.  |
|                                     |  |                     | <b>CO4</b>   | Evaluate efficiency of large signal (power) amplifiers and voltage regulators.   |
| 3                                   | Control Systems                              | 19A02404            | <b>CO1</b>   | Understand the concepts of control systems classification, feedback effect, mathematical modelling, time response and frequency response characteristics, state space analysis.  |
|                                     |  |                     | <b>CO2</b>   | Apply the concepts of Block diagram reduction, Signal flow graph method and state space formulation for obtaining mathematical and Root locus, Bode, Nyquist, Polar plots for stability calculations, controllability and observability and demonstrate the use of these techniques. |
|                                     |  |                     | <b>CO3</b>   | Analyse time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.  |
|                                     |  |                     | <b>CO4</b>   | Design and develop different compensators, controllers and their performance evaluation for  |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |  |           |     |  |
|---|--|-----------|-----|--|
|   |  |           |     | various conditions. Implement them in solving various engineering applications.  |
| 4 | Analog Communications                  | 19A04403T | CO1 | Understand the concepts of various Amplitude, Angle and Pulse Modulation schemes. Understand the concepts of information theory with random processes.       |
|   |  |           | CO2 | Apply the concepts to solve problems in analog and pulse modulation schemes.   |
|   |  |           | CO3 | Analysis of analog communication system in the presence of noise.  |
|   |  |           | CO4 | Compare and contrast design issues, advantages, disadvantages and limitations of various modulation schemes in analog communication systems.                 |
|   |  |           | CO5 | Solve basic communication problems & calculate information rate and channel capacity of a discrete communication channel.                                    |
| 5 | Python Programming                     | 19A05304T | CO1 | Apply the features of Python language in various real applications.  |
|   |  |           | CO2 | Select appropriate data structure of Python for solving a problem.   |
|   |  |           | CO3 | Design object oriented programs using Python for solving real-world problems.  |
|   |  |           | CO4 | Apply modularity to programs.  |
| 6 | Computer Architecture and Organization | 19A04404  | CO1 | Conceptualize basics of organizational and architectural issues of a digital computer.   |
|   |  |           | CO2 | Emphasize representation of data types, numbers employed in arithmetic operations and binary coding of symbols used in data processing.                      |
|   |  |           | CO3 | Develop low-level programs to perform different basic instructions.  |
|   |  |           | CO4 | Evaluate various modes of data transfer between CPU and I/O devices.   |
|   |  |           | CO5 | Analyze various issues related to memory hierarchy.  |
|   |  |           | CO6 | Design basic computer system using the major components.   |
| 7 | Universal Human Values                 | 19A52301  | CO1 | Students are expected to become more aware of themselves, and their surroundings (family, society, nature).  |
|   |  |           | CO2 | They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. |

|    |   |           |            |   |
|----|---|-----------|------------|---|
|    |   |           | <b>CO3</b> | They would have better critical ability.  |
|    |   |           | <b>CO4</b> | They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).  |
|    |   |           | <b>CO5</b> | 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. |
| 8  | Electronic Circuits –<br>Analysis and Design<br>Lab | 19A04402P | <b>CO1</b> | Understand Characteristics and frequency response of various amplifiers.  |
|    |   |           | <b>CO2</b> | Analyze negative feedback amplifier circuits, oscillators, Power amplifiers, Tuned amplifiers.  |
|    |   |           | <b>CO3</b> | Determine the efficiencies of power amplifiers.   |
|    |   |           | <b>CO4</b> | Design RC and LC oscillators, Feedback amplifier for specified gain and multistage amplifiers for Low, Mid and high frequencies.  |
|    |   |           | <b>CO5</b> | Simulate all the circuits and compare the performance.  |
| 9  | Analog<br>Communications Lab                        | 19A04403P | <b>CO1</b> | Understand different analog modulation techniques & Radio receiver characteristics.   |
|    |   |           | <b>CO2</b> | Analyze different analog modulation techniques.   |
|    |   |           | <b>CO3</b> | Design and implement different modulation and demodulation techniques.  |
|    |   |           | <b>CO4</b> | Observe the performance of system by plotting graphs & Measure radio receiver characteristics.  |
|    |   |           | <b>CO5</b> | Simulate all digital modulation and demodulation techniques.  |
| 10 | Environmental<br>Science                            | 19A99301  | <b>CO1</b> | Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources.  |
|    |   |           | <b>CO2</b> | Understand flow and bio-geo- chemical cycles and ecological pyramids.   |
|    |   |           | <b>CO3</b> | Understand various causes of pollution and solid waste management and related preventive measures.  |
|    |   |           | <b>CO4</b> | About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.   |
|    |   |           | <b>CO5</b> | Casus of population explosion, value education and welfare programmes.  |





| COURSE OUTCOMES              |                                      |              | REGULATION: R19                               |   |
|------------------------------|--------------------------------------|--------------|---|---|
| YEAR/SEM: III B.TECH - I SEM |                                      |              | BRANCH: ECE                                   |   |
| S.No                         | Subject Name                         | Subject Code | Course Outcomes (CO): Student will be able to |   |
| 1                            | Integrated Circuits and Applications | 19A04501T    | CO1   | Understand DC and AC characteristics of operational amplifiers & Op amp parameters and functionality of specialized ICs such as 555 TIMER, VCO, PLL & Voltage regulators. |
|                              |                                      |              | CO2   | Make use of Op-Amps and specialized ICs to design circuits for various applications.  |
|                              |                                      |              | CO3   | Analyze Op-Amp based Comparators, Waveform generators, Active filters, Converters.  |
|                              |                                      |              | CO4   | Design of Op amp based Comparators, Waveform Generators, Active filters, Converters, design various multi-vibrator circuits using IC 555 timer                            |
|                              |                                      |              | CO5   | Compare different types of A/D and D/A Converter circuits.  |
| 2                            | Antennas and Wave Propagation        | 19A04502     | CO1   | Understand various antenna parameters, principle of operation of various antennas viz. wired, aperture, micro strip antennas.   |
|                              |                                      |              | CO2   | Discuss various EM wave propagation methods in ionosphere and troposphere   |
|                              |                                      |              | CO3   | Analyze mathematical aspects of wave propagation, Derive expressions related to radiation mechanisms for antennas   |
|                              |                                      |              | CO4   | Design various antennas namely array, micro strip, horn, lens and aperture antennas, etc., for a given application.   |
|                              |                                      |              | CO5   | Compare performance of various antennas.  |
| 3                            | English Language Skills              | 19A52601T    | CO1   | Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.                            |
|                              |                                      |              | CO2   | Apply grammatical structures to formulate sentences and correct word forms.   |
|                              |                                      |              | CO3   | Analyze discourse markers to speak clearly on a specific topic in informal discussions.   |
|                              |                                      |              | CO4   | Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.   |
|                              |                                      |              | CO5   | Create a coherent paragraph interpreting a figure/graph/chart/table.  |





|   |   |           |     |   |
|---|---|-----------|-----|---|
| 4 | Digital Communications                        | 19A04503T | CO1 | Understand the elements of digital communication system, baseband pulse transmission, pass band digital modulation, geometric representation of signals, basics of information theory and error correcting codes. |
|   |   |           | CO2 | Apply the knowledge of signals and system & statistical theory to evaluate the performance of digital communication systems.  |
|   |   |           | CO3 | Analyze the different coding, modulation techniques, Probability of error performance of digital system.  |
|   |   |           | CO4 | Compare the performance of different modulation schemes & error correcting codes.   |
| 5 | Data Communications & Networks                | 19A04504a | CO1 | Understand the requirement of theoretical & practical aspects of computer networks, functions of various layers involved in data communications, building the skills of sub netting and routing mechanisms.       |
|   |   |           | CO2 | Explain the role of protocols in networking.  |
|   |   |           | CO3 | Analyze the services and features of the various layers in the protocol stack.  |
| 6 | Technical Communication & Presentation Skills | 19A52606a | CO1 | Understand the importance of effective technical communication.   |
|   |   |           | CO2 | Apply the knowledge of basic skills to become good orators.   |
|   |   |           | CO3 | Analyze non-verbal language suitable to different situations in professional life.  |
|   |   |           | CO4 | Evaluate different kinds of methods used for effective presentations.   |
|   |   |           | CO5 | Create trust among people and develop employability skills.   |
| 7 | Integrated Circuits and Applications Lab      | 19A04501P | CO1 | Understand the working of Op amp ICs & Application specific analog ICs.   |
|   |   |           | CO2 | Analyze operational amplifier based circuits for linear and non-linear applications.  |
|   |   |           | CO3 | Design Operational amplifiers for linear and nonlinear application, Multivibrator circuits using 555 & application specific ICs.  |
|   |   |           | CO4 | Simulate all linear and nonlinear application based Op amp Circuits and circuits based on application specific ICs.   |
|   |   |           | CO5 | Compare theoretical, practical & simulated results in integrated circuits.  |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                             |           |     |  |
|----|-----------------------------|-----------|-----|--|
| 8  | English Language Skills Lab | 19A52601P | CO1 | Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills.                                  |
|    |                             |           | CO2 | Apply communication skills through various language learning activities.   |
|    |                             |           | CO3 | Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.             |
|    |                             |           | CO4 | Evaluate and exhibit acceptable etiquette essential in social and professional settings.   |
|    |                             |           | CO5 | Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                                     |
| 9  | Digital Communications Lab  | 19A04503P | CO1 | Understand real time behavior of different digital modulation schemes and technically visualize spectra of different digital modulation schemes. |
|    |                             |           | CO2 | Design and implement different modulation and demodulation techniques.   |
|    |                             |           | CO3 | Analyze digital modulation & demodulation techniques.  |
|    |                             |           | CO4 | Simulate all digital modulation and demodulation techniques in MATLAB.   |
| 10 | Research Methodolgy         | 19A99601  | CO1 | Understand basic concepts and its methodologies.   |
|    |                             |           | CO2 | Demonstrate the knowledge of research processes.   |
|    |                             |           | CO3 | Read, comprehend and explain research articles in their academic discipline.   |
|    |                             |           | CO4 | Analyze various types of testing tools used in research.   |
|    |                             |           | CO5 | Design a research paper without any ethical issues.  |



| COURSE OUTCOMES               |   |              | REGULATION: R19                               |   |
|-------------------------------|---|--------------|---|---|
| YEAR/SEM: III B.TECH - II SEM |   |              | BRANCH: ECE                                   |   |
| S.No                          | Subject Name                            | Subject Code | Course Outcomes (CO): Student will be able to |   |
| 1                             | Microprocessors and Micro controllers   | 19A04601T    | CO1   | Understand instruction set of 8086 microprocessor and ARM architecture.   |
|                               |   |              | CO2   | Explain addressing modes of 8086, develop assembly language programs for various problems, describe interfacing of 8086 with peripheral devices, architecture and addressing modes of ARM Cortex M0+, assembly instruction set of ARM Cortex M0+. |
|                               |   |              | CO3   | Distinguish between microprocessor and micro controller, 8085 & 8086 microprocessors, design applications using micro controllers.  |
| 2                             | Digital Signal Processing               | 19A04602T    | CO1   | Understand the basic concepts of IIR and FIR filters, DSP building blocks to achieve high speed in DSP processor, DSP TMS320C54XX architecture and instructions.  |
|                               |   |              | CO2   | Compute the fast Fourier transforms and find the relationship with other transforms. Realization of digital filter structures.  |
|                               |   |              | CO3   | Design of FIR and IIR digital filters.  |
|                               |   |              | CO4   | Compare FIR and IIR filters.  |
| 3                             | Digital System Design through VHDL      | 19A04603     | CO1   | Understand the architecture of FPGAs, tools used in modelling of digital design and modelling styles in VHDL.   |
|                               |   |              | CO2   | Learn the IEEE Standard 1076 Hardware Description Language (VHDL).  |
|                               |   |              | CO3   | Analyze and design basic digital circuits with combinational and sequential logic circuits using VHDL.  |
|                               |   |              | CO4   | Model complex digital systems at several levels of abstractions, behavioural, structural.   |
|                               |   |              | CO5   | Design complex digital CPU, vending machine and washing machines etc and analyze the case studies.  |
| 4                             | Principles & Techniques of Radar System | 19A04605e    | CO1   | Understand the basic principles of RADAR and its variants, RADAR based Microwave imaging.   |
|                               |   |              | CO2   | Apply the fundamental knowledge of various RADARs, Matched Filter and to find the range between the target and RADAR, frequency and phase of the received signal.   |
|                               |   |              | CO3   | Analyze the received data from the target using CW RADAR & MTI RADAR and to find the  |



|   |   |           |     |  |
|---|---|-----------|-----|--|
|   |   |           |     | distance, tracking range for clutter analysis.   |
| 5 | Soft Skills                               | 19A52604a | CO1 | Recognize the importance of verbal and non verbal skills.  |
|   |   |           | CO2 | Develop the interpersonal and intra personal skills.   |
|   |   |           | CO3 | Apply the knowledge in setting the SMART goals and achieve the set goals.  |
|   |   |           | CO4 | Analyze difficult situations and solve the problems in stress-free environment.  |
|   |   |           | CO5 | Create trust among people and develop employability skills.  |
| 6 | Managerial Economics & Financial Analysis | 19A52602b | CO1 | Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets.  |
|   |   |           | CO2 | Apply concepts of production , cost and revenues for effective business decisions.   |
|   |   |           | CO3 | Students can analyze how to invest their capital and maximize returns.   |
|   |   |           | CO4 | Evaluate the capital budgeting techniques.   |
|   |   |           | CO5 | Prepare the accounting statements and evaluate the financial performance of business entity.   |
| 7 | Digital Signal Processing Lab             | 19A04602P | CO1 | Ability to design-test, to verify, to evaluate, and to benchmark a real-time DSP system.   |
|   |   |           | CO2 | Ability to calculate discrete time domain and frequency domain of signals using discrete Fourier series and Fourier transform.   |
|   |   |           | CO3 | Ability to design, using MATLAB-based filter design techniques, FIR and IIR digital filtersand Determine the frequency response of filters.                                      |
|   |   |           | CO4 | Implementation of basic signal processing algorithms such as convolution, difference equation implementation and application of them in the construction of FIR and IIR filters. |
|   |   |           | CO5 | Design DSP based real time processing systems to meet desired needs of the society   |
| 8 | Microprocessors and Microcontrollers Lab  | 19A04601P | CO1 | Execution of different programs for 8086, 8051 in Assembly Level Language using MASM Assembler   |
|   |   |           | CO2 | Design and implement some specific real time applications.   |
| 9 | Constitution of India                     | 19A99501  | CO1 | Understand historical background of the constitution making and its importance for building a democratic India.  |
|   |   |           | CO2 | Understand the functioning of three wings of the government ie., executive, legislative and  |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |  |
|--|--|--|------------|--|
|  |  |  |            | judiciary.   |
|  |  |  | <b>CO3</b> | Understand the value of the fundamental rights and duties for becoming good citizen of India.  |
|  |  |  | <b>CO4</b> | Analyze the decentralization of power between central, state and local self government   |
|  |  |  | <b>CO5</b> | Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy. |



| <b>COURSE OUTCOMES</b>             |  |                     | <b>REGULATION: R19</b>                               |   |
|------------------------------------|--|---------------------|--|---|
| <b>YEAR/SEM: IV B.TECH - I SEM</b> |  |                     | <b>BRANCH: ECE</b>                                   |   |
| <b>S.No</b>                        | <b>Subject Name</b>                              | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |   |
| 1                                  | Microwave Engineering and Optical Communications | 19A04701T           | <b>CO1</b>   | Understand the wave propagation in waveguides, principle of operation of optical sources, detectors, microwave active and passive devices. Also remember various types of fibers, modes, configurations and signal degradations.            |
|                                    |  |                     | <b>CO2</b>   | Apply the boundary conditions of the waveguides to solve for field expressions in waveguides.   |
|                                    |  |                     | <b>CO3</b>   | Derive the field expressions for different modes of the waveguides, and Scattering matrix for passive microwave devices. Analyze signal degradation in optical fibers and compare the performance of various optical sources and detectors. |
|                                    |  |                     | <b>CO4</b>   | Differentiate Linear beam tubes and crossed field tubes in terms of operation and performance.  |
| 2                                  | VLSI Design                                      | 19A04702T           | <b>CO1</b>   | Identify the design for testability methods for combinational & sequential CMOS circuits. Understand CMOS fabrication flow, technology scaling, sheet resistance, square capacitance and propagation delays in CMOS circuits.               |
|                                    |  |                     | <b>CO2</b>   | Apply the design Rules and draw layout of a given logic circuit and basic circuit concepts to MOS circuits.   |
|                                    |  |                     | <b>CO3</b>   | Analyze the behavior of amplifier circuits with various loads, static and dynamic logic circuits, various test generation methods for static and dynamic CMOS circuits.   |
|                                    |  |                     | <b>CO4</b>   | Design MOSFET based logic circuit, Amplifier circuits using MOS transistors and MOSFET based logic circuits using various logic styles like static and dynamic CMOS   |
| 3                                  | Embedded Systems                                 | 19A04703c           | <b>CO1</b>   | Identify hardware and software components of an embedded system.  |
|                                    |  |                     | <b>CO2</b>   | Choose appropriate embedded system architecture for the given application.  |
|                                    |  |                     | <b>CO3</b>   | Discuss quality attributes and characteristics of an embedded system.   |
|                                    |  |                     | <b>CO4</b>   | Illustrate different Inter Process Communication  |





Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |  |           |            |  |
|---|--|-----------|------------|--|
|   |  |           |            | (IPC) mechanisms used by tasks/process/tasks to communicate in multitasking environment.   |
|   |  |           | <b>CO5</b> | Design an RTOS based embedded system.  |
| 4 | Renewable Energy Systems                 | 19A02704a | <b>CO1</b> | To distinguish between various alternate sources of energy for different suitable application requirements.  |
|   |  |           | <b>CO2</b> | To differentiate between solar thermal and PV system energy generation strategies.   |
|   |  |           | <b>CO3</b> | To understand about wind energy system   |
|   |  |           | <b>CO4</b> | To get exposed to the basics of Geo Thermal Energy Systems.  |
|   |  |           | <b>CO5</b> | To know about various diversified energy scenarios of ocean, biomass and fuel cells  |
| 5 | Management Science                       | 19A52701b | <b>CO1</b> | Understand the concepts & principles of management and designs of organization in a practical world.   |
|   |  |           | <b>CO2</b> | Apply the knowledge of Work-study principles & Quality Control techniques in Industry.   |
|   |  |           | <b>CO3</b> | Analyze the concepts of HRM in Recruitment, Selection and Training & Development.  |
|   |  |           | <b>CO4</b> | Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.   |
|   |  |           | <b>CO5</b> | Create Modern technology in management science.  |
| 6 | Microwave and Optical Communications Lab | 19A04701P | <b>CO1</b> | Understand the mode characteristics of Reflex Klystron oscillator and negative resistance characteristics of Gunn Oscillator.  |
|   |  |           | <b>CO2</b> | Determine the Scattering matrix of given passive device experimentally and verify the same theoretically. Also determine numerical aperture and bending losses of a given optical fiber. |
|   |  |           | <b>CO3</b> | Analyze the radiation characteristics to find the directivity and HPBW of a given antenna.   |
|   |  |           | <b>CO4</b> | Establish optical link between transmitter and receiver experimentally to find attenuation and signal strength of the received signal.   |
| 7 | VLSI Design Lab                          | 19A04702P | <b>CO1</b> | Understand how to use FPGA/CPLD hardware tools in the lab.   |
|   |  |           | <b>CO2</b> | Develop HDL source code for the given problem/experiment, and simulate the given circuit with suitable simulator and verify the results.   |
|   |  |           | <b>CO3</b> | Analyze the obtained results of the given  |





Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |  |
|--|--|--|------------|--|
|  |  |  |            | experiment/problem.  |
|  |  |  | <b>CO4</b> | Design and implement the experiments using FPGA/CPLD hardware tools. |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

| COURSE OUTCOMES              |   |              | REGULATION: R19                               |  |
|------------------------------|---|--------------|---|--|
| YEAR/SEM: IV B.TECH - II SEM |   |              | BRANCH: ECE                                   |  |
| S.No                         | Subject Name                                      | Subject Code | Course Outcomes (CO): Student will be able to |  |
| 1                            | Advanced 3G and 4G Wireless Mobile Communications | 19A04801a    | CO1   | Understand the concepts of wireless communications and standards.                                    |
|                              |   |              | CO2   | Apply a wireless technique to solve engineering problem.   |
|                              |   |              | CO3   | Analyze working of wireless technologies.  |
|                              |   |              | CO4   | Evaluate a wireless technique in a given situation.  |
|                              |   |              | CO5   | Plan a wireless system for deployment.   |
| 2                            | Disaster Management                               | 19A01802a    | CO1   | Affirm the usefulness of integrating management principles in disaster mitigation work.              |
|                              |   |              | CO2   | Distinguish between the different approaches needed to manage pre- during and post disaster periods. |
|                              |   |              | CO3   | Explain the process of risk management.  |
|                              |   |              | CO4   | Relate to risk transfer.   |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

# DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING



| <b>COURSE OUTCOMES</b>            |                               |                     | <b>REGULATION: R19</b>                               |  |
|-----------------------------------|-------------------------------|---------------------|--|--|
| <b>YEAR/SEM: I B.TECH - I SEM</b> |                               |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                       | <b>Subject Name</b>           | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                 | Algebra and Calculus          | 19A54101            | <b>CO1</b>   | Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.   |
|                                   |                               |                     | <b>CO2</b>   | Utilize mean value theorems to real life problems.   |
|                                   |                               |                     | <b>CO3</b>   | Familiarize with functions of several variables which is useful in optimization.   |
|                                   |                               |                     | <b>CO4</b>   | Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems. |
|                                   |                               |                     | <b>CO5</b>   | Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions.                        |
| 2                                 | Applied Physics               | 19A56101T           | <b>CO1</b>   | Identify the wave properties of light and the interaction of energy with the matter.   |
|                                   |                               |                     | <b>CO2</b>   | Apply electromagnetic wave propagation in different guided media.  |
|                                   |                               |                     | <b>CO3</b>   | Asses the electromagnetic wave propagation and its power in different media.   |
|                                   |                               |                     | <b>CO4</b>   | Calculate conductivity of semiconductors.  |
|                                   |                               |                     | <b>CO5</b>   | Interpret the difference between normal conductor and superconductor.  |
|                                   |                               |                     | <b>CO6</b>   | Demonstrate the application of nano materials.   |
| 3                                 | Problem Solving & Programming | 19A05101T           | <b>CO1</b>   | Construct his own computer using parts.  |
|                                   |                               |                     | <b>CO2</b>   | Recognize the importance of programming language independent constructs.   |
|                                   |                               |                     | <b>CO3</b>   | Solve computational problems.  |
|                                   |                               |                     | <b>CO4</b>   | Select the features of C language appropriate for solving a problem.   |
|                                   |                               |                     | <b>CO5</b>   | Design computer programs for real world problems.  |
|                                   |                               |                     | <b>CO6</b>   | Organize the data which is more appropriated for solving a problem.  |
| 4                                 | Communicative English - I     | 19A52101T           | <b>CO1</b>   | Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.   |
|                                   |                               |                     | <b>CO2</b>   | Apply grammatical structures to formulate sentences and correct word forms.  |
|                                   |                               |                     | <b>CO3</b>   | Analyze discourse markers to speak clearly on a specific topic in informal discussions.  |



|   |   |           |            |   |
|---|---|-----------|------------|---|
|   |   |           | <b>CO4</b> | Evaluate reading/listening texts and to write summaries based on global.  |
|   |   |           | <b>CO5</b> | Create a coherent paragraph interpreting a figure/graph/chart/table.  |
| 5 | Electrical & Electronics Engineering Workshop | 19A02101  | <b>CO1</b> | Able to demonstrate knowledge on different tools, abbreviations and symbols used in Electrical Engineering.       |
|   |   |           | <b>CO2</b> | Able to measure different electrical quantities using measuring instruments.                                      |
|   |   |           | <b>CO3</b> | Able to demonstrate how to trouble shoot the electrical equipments (like fan, grinder, motor, etc.).              |
|   |   |           | <b>CO4</b> | Able to do wiring and earthing for residential houses.  |
| 6 | Applied Physics Lab                           | 19A56101P | <b>CO1</b> | Operate optical instruments like microscope and spectrometer.   |
|   |   |           | <b>CO2</b> | Determine thickness of a hair/paper with the concept of interference.   |
|   |   |           | <b>CO3</b> | Estimate the wavelength of different colors using diffraction grating and resolving Power.                        |
|   |   |           | <b>CO4</b> | Plot the intensity of the magnetic field of circular coil carrying current with distance                          |
|   |   |           | <b>CO5</b> | Evaluate the acceptance angle of an optical fiber and numerical aperture.   |
|   |   |           | <b>CO6</b> | Determine magnetic susceptibility of the material and its losses by B-H curve.                                    |
|   |   |           | <b>CO7</b> | Determine the resistivity of the given semiconductor using four probe method.                                     |
|   |   |           | <b>CO8</b> | Identify the type of semiconductor i.e., n-type or p-type using hall effect.                                      |
|   |   |           | <b>CO9</b> | Calculate the band gap of a given semiconductor.  |
| 7 | Problem Solving & Programming Lab             | 19A05101P | <b>CO1</b> | Construct a Computer given its parts.   |
|   |   |           | <b>CO2</b> | Select the right control structure for solving the problem.   |
|   |   |           | <b>CO3</b> | Analyze different sorting algorithms.   |
|   |   |           | <b>CO4</b> | Design solutions for computational problems.  |
|   |   |           | <b>CO5</b> | Develop C programs which utilize the memory efficiently using programming constructs.                             |
| 8 | Communicative English - I Lab                 | 19A52101P | <b>CO1</b> | To remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills |
|   |   |           | <b>CO2</b> | To apply communication skills through various language learning activities.                                       |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |   |
|--|--|--|------------|---|
|  |  |  | <b>CO3</b> | To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension. |
|  |  |  | <b>CO4</b> | To evaluate and exhibit acceptable etiquette essential in social and professional settings  |
|  |  |  | <b>CO5</b> | To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                         |



| <b>COURSE OUTCOMES</b>             |  |                     | <b>REGULATION: R19</b>                               |  |
|------------------------------------|--|---------------------|--|--|
| <b>YEAR/SEM: I B.TECH - II SEM</b> |  |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                        | <b>Subject Name</b>                        | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                  | Basic Civil & Mechanical Engineering       | 19A01201T           | <b>CO1</b>   | Draw SFD and BMD for cantilever and Simply supported beams.  |
|                                    |  |                     | <b>CO2</b>   | Understand the working principles of electrical resistors and capacitors.  |
|                                    |  |                     | <b>CO3</b>   | Apply concepts of Rosetta analysis for strain measurements.  |
|                                    |  |                     | <b>CO4</b>   | Outline sources of energy, power plant economics, and environmental aspects (L2).  |
|                                    |  |                     | <b>CO5</b>   | Describe working components of a steam power plant.  |
|                                    |  |                     | <b>CO6</b>   | Illustrate the working mechanism of Diesel and Gas turbine power plants.   |
|                                    |  |                     | <b>CO7</b>   | Explain different types of pumps and their application.  |
|                                    |  |                     | <b>CO8</b>   | Explain working of IC engines with combustion process.   |
|                                    |  |                     | <b>CO9</b>   | Possess the knowledge of system components of refrigeration and air conditioning.  |
| 2                                  | Differential Equations and Vector Calculus | 19A54201            | <b>CO1</b>   | Solve the differential equations related to various engineering fields.  |
|                                    |  |                     | <b>CO2</b>   | Identify solution methods for partial differential equations that model physical Processes.                                |
|                                    |  |                     | <b>CO3</b>   | Interpret the physical meaning of different operators such as gradient, curl and Divergence.                               |
|                                    |  |                     | <b>CO4</b>   | Estimate the work done against a field, circulation and flux using vector calculus.  |
| 3                                  | Chemistry                                  | 19A51102T           | <b>CO1</b>   | Compare the materials of construction for battery and electrochemical sensors.   |
|                                    |  |                     | <b>CO2</b>   | Explain the preparation, properties, and applications of thermoplastics &thermosettings, elastomers & conducting polymers. |
|                                    |  |                     | <b>CO3</b>   | Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.                          |
|                                    |  |                     | <b>CO4</b>   | Apply the principle of supramolecular chemistry in application of molecular machines and switches.                         |
| 4                                  | Data Structures                            | 19A05201T           | <b>CO1</b>   | Select Appropriate Data Structure for solving a real world problem.  |
|                                    |  |                     | <b>CO2</b>   | Select appropriate file organization technique   |





Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |  |           |            |   |
|---|--|-----------|------------|---|
|   |  |           |            | depending on the processing to be done.                             |
|   |  |           | <b>CO3</b> | Construct Indexes for Databases.                                    |
|   |  |           | <b>CO4</b> | Analyse the Algorithms.   |
|   |  |           | <b>CO5</b> | Develop Algorithm for Sorting large files of data.                  |
| 5 | Engineering Workshop                     | 19A03101  | <b>CO1</b> | Apply wood working skills in real world applications.               |
|   |  |           | <b>CO2</b> | Build different parts with metal sheets in real world applications. |
|   |  |           | <b>CO3</b> | Apply fitting operations in various applications.                   |
|   |  |           | <b>CO4</b> | Apply different types of basic electric circuit connections.        |
|   |  |           | <b>CO5</b> | Demonstrate soldering and brazing.                                  |
| 6 | Engineering Graphics Lab                 | 19A03102  | <b>CO1</b> | Draw various curves applied in engineering.                         |
|   |  |           | <b>CO2</b> | Show projections of solids and sections graphically.                |
|   |  |           | <b>CO3</b> | Draw the development of surfaces of solids.                         |
|   |  |           | <b>CO4</b> | Use computers as a drafting tool.                                   |
|   |  |           | <b>CO5</b> | Draw isometric and orthographic drawings using CAD packages.        |
| 7 | Basic Civil & Mechanical Engineering Lab | 19A01201P | <b>CO1</b> | Explain different working cycles of engine.                         |
|   |  |           | <b>CO2</b> | Illustrate the working of refrigeration systems                     |
|   |  |           | <b>CO3</b> | Evaluate heat balance sheet of IC engine.                           |
| 8 | Chemistry Lab                            | 19A51102P | <b>CO1</b> | Determine the cell constant and conductance of solutions.           |
|   |  |           | <b>CO2</b> | Prepare advanced polymer materials.                                 |
|   |  |           | <b>CO3</b> | Measure the strength of an acid present in secondary batteries.     |
|   |  |           | <b>CO4</b> | Analyse the IR and NMR of some organic compounds.                   |
| 9 | Data Structures Lab                      | 19A05201P | <b>CO1</b> | Select the data structure appropriate for solving the problem.      |
|   |  |           | <b>CO2</b> | Implement searching and sorting algorithms.                         |
|   |  |           | <b>CO3</b> | Design new data types.  |
|   |  |           | <b>CO4</b> | Illustrate the working of stack and queue.                          |
|   |  |           | <b>CO5</b> | Organize the data in the form of files.                             |



| <b>COURSE OUTCOMES</b>             |                                   |                     | <b>REGULATION: R19</b>                               |  |
|------------------------------------|-----------------------------------|---------------------|--|--|
| <b>YEAR/SEM: II B.TECH - I SEM</b> |                                   |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                        | <b>Subject Name</b>               | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                  | Complex Variables And Transforms  | 19A54302            | <b>CO1</b>   | Understand the analyticity of complex functions and conformal mappings.  |
|                                    |                                   |                     | <b>CO2</b>   | Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours.   |
|                                    |                                   |                     | <b>CO3</b>   | Understand the usage of Laplace Transforms, Fourier Transforms and Z transforms.   |
|                                    |                                   |                     | <b>CO4</b>   | Evaluate the Fourier series expansion of periodic functions.   |
| 2                                  | Basic Electrical Circuits         | 19A02301T           | <b>CO1</b>   | Given a network, find the equivalent impedance by using network reduction techniques and determine the current through any element and voltage across and power through any element. |
|                                    |                                   |                     | <b>CO2</b>   | Given a circuit and the excitation, determine the real power, reactive power, power factor etc.  |
|                                    |                                   |                     | <b>CO3</b>   | Apply the network theorems suitably.   |
|                                    |                                   |                     | <b>CO4</b>   | Determine the Dual of the Network, develop the Cut Set and Tie-set Matrices for a given Circuit. Also understand various basic definitions and concepts.                             |
| 3                                  | Power System Architecture         | 19A02302            | <b>CO1</b>   | Remember and understand the concepts of conventional and non conventional power generating systems.  |
|                                    |                                   |                     | <b>CO2</b>   | Apply the economic aspects to the power generating systems.  |
|                                    |                                   |                     | <b>CO3</b>   | Analyse the transmission lines and obtain the transmission line parameters and constants.  |
|                                    |                                   |                     | <b>CO4</b>   | Design and Develop the schemes to improve the generation and capability of transmission line to meet the day to day power requirements.  |
| 4                                  | Dc Machines & Transformers        | 19A02303T           | <b>CO1</b>   | Understand the concepts of magnetic circuits.  |
|                                    |                                   |                     | <b>CO2</b>   | Understand the operation of DC machines.   |
|                                    |                                   |                     | <b>CO3</b>   | Analyse the differences in operation of different DC machine configurations.   |
|                                    |                                   |                     | <b>CO4</b>   | Analyse single phase and three phase transformers circuits.  |
| 5                                  | Semi Conductor Devices & Circuits | 19A04306T           | <b>CO1</b>   | List various types of semiconductor devices.   |
|                                    |                                   |                     | <b>CO2</b>   | Study the characteristics of various types of semiconductor devices.   |
|                                    |                                   |                     | <b>CO3</b>   | Apply the characteristics of semiconductor devices to develop engineering solutions.   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuram)

|    |   |           |            |  |
|----|---|-----------|------------|--|
|    |   |           | <b>CO4</b> | Analyse functioning of various types of electronic devices and circuits.   |
| 6  | Digital Electronics & Logic Design      | 19A04304  | <b>CO1</b> | Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.          |
|    |   |           | <b>CO2</b> | Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families. |
|    |   |           | <b>CO3</b> | Design combinational and sequential logic circuits.  |
|    |   |           | <b>CO4</b> | Compare different types of Programmable logic devices and logic families.  |
| 7  | Dc Machines & Transformers Lab          | 19A02303P | <b>CO1</b> | Able to conduct and analyze load test on DC shunt generators.  |
|    |   |           | <b>CO2</b> | Able to understand and analyze magnetization characteristics of DC shunt generator.  |
|    |   |           | <b>CO3</b> | Able to understand and analyze speed control techniques and efficiency of DC machines.   |
|    |   |           | <b>CO4</b> | Able to understand to predetermine efficiency and regulation of single phase Transformers.   |
| 8  | Semi Conductor Devices And Circuits Lab | 19A04306P | <b>CO1</b> | Understand the basic characteristics and applications of basic electronic devices.   |
|    |   |           | <b>CO2</b> | Observe the characteristics of electronic devices by plotting graphs.  |
|    |   |           | <b>CO3</b> | Analyze the Characteristics of UJT, BJT, FET, and SCR.   |
|    |   |           | <b>CO4</b> | Design FET based amplifier circuits/BJT based amplifiers for the given specifications.   |
|    |   |           | <b>CO5</b> | Simulate all circuits in PSPICE /Multisim.   |
| 9  | Basic Electrical Circuits Lab           | 19A02301P | <b>CO1</b> | Remember, understand and apply various theorems and verify practically.  |
|    |   |           | <b>CO2</b> | Understand and analyze active, reactive power measurements in three phase balanced & unbalanced circuits.                                    |
| 10 | Biology for Engineers                   | 19A99302  | <b>CO1</b> | Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.            |
|    |   |           | <b>CO2</b> | Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry.    |
|    |   |           | <b>CO3</b> | Briefly about human physiology.  |
|    |   |           | <b>CO4</b> | Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.              |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |   |
|--|--|--|------------|---|
|  |  |  | <b>CO5</b> | Know about application of biological Principles in different technologies for the production of medicines and Pharmaceutical molecules through transgenic microbes, plants and animals. |
|--|--|--|------------|---|



| <b>COURSE OUTCOMES</b>              |  |                     | <b>REGULATION: R19</b>                               |  |
|-------------------------------------|--|---------------------|--|--|
| <b>YEAR/SEM: II B.TECH - II SEM</b> |  |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                         | <b>Subject Name</b>                    | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                   | Numerical Methods & Probability Theory | 19A54304            | <b>CO1</b>   | Apply numerical methods to solve algebraic and transcendental equations.   |
|                                     |  |                     | <b>CO2</b>   | Derive interpolating polynomials using interpolation formulae.   |
|                                     |  |                     | <b>CO3</b>   | Solve differential and integral equations numerically.   |
|                                     |  |                     | <b>CO4</b>   | Apply Probability theory to find the chances of happening of events.   |
|                                     |  |                     | <b>CO5</b>   | Understand various probability distributions and calculate their statistical constants.  |
| 2                                   | Electrical Circuit Analysis            | 19A02401T           | <b>CO1</b>   | Understand the analysis of three phase balanced and unbalanced circuits and to measure active and reactive powers in three phase circuits. |
|                                     |  |                     | <b>CO2</b>   | To get knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.             |
|                                     |  |                     | <b>CO3</b>   | Applications of Fourier transforms to electrical circuits excited by non-sinusoidal sources are known.                                     |
|                                     |  |                     | <b>CO4</b>   | Design of filters, equalizers and PSPICE programs for Circuit Analysis.  |
| 3                                   | Engineering Electro Magnetics          | 19A02402            | <b>CO1</b>   | Understand the concept of electrostatics.  |
|                                     |  |                     | <b>CO2</b>   | Understand the concepts of Conductors and Dielectrics.   |
|                                     |  |                     | <b>CO3</b>   | Understand the fundamental laws related to Magneto Statics.  |
|                                     |  |                     | <b>CO4</b>   | Understand the concepts of Magnetic Potential and Time varying Fields.   |
| 4                                   | Power Electronics                      | 19A02403            | <b>CO1</b>   | Understand the operation, characteristics and usage of basic Power Semiconductor Devices.  |
|                                     |  |                     | <b>CO2</b>   | Understand different types of Rectifier circuits with different operating conditions.  |
|                                     |  |                     | <b>CO3</b>   | Understand DC-DC converters operation and analysis of their characteristics.   |
|                                     |  |                     | <b>CO4</b>   | Understand the construction and operation of voltage source inverters, Voltage Controllers and Cyclo Converters.                           |
|                                     |  |                     | <b>CO5</b>   | Apply all the above concepts to solve various numerical problem solving  |
| 5                                   | Analog Electronic Circuits             | 19A04405            | <b>CO1</b>   | List various types of feedback amplifiers, oscillators and large signal amplifiers.  |



|   |                                 |           |            |   |
|---|---------------------------------|-----------|------------|---|
|   |                                 |           |            |   |
|   |                                 |           | <b>CO2</b> | Explain the operation of various electronic circuits and linear ICs.  |
|   |                                 |           | <b>CO3</b> | Apply various types of electronic circuits to solve engineering problems.   |
|   |                                 |           | <b>CO4</b> | Analyse various electronic circuits and regulated power supplies for proper understanding.  |
|   |                                 |           | <b>CO5</b> | Justify choice of transistor configuration in a cascade amplifier.  |
|   |                                 |           | <b>CO6</b> | Design electronic circuits for a given specification.   |
| 6 | Python Programming              | 19A05304T | <b>CO1</b> | Apply the features of Python language in various real applications.   |
|   |                                 |           | <b>CO2</b> | Select appropriate data structure of Python for solving a problem.  |
|   |                                 |           | <b>CO3</b> | Design object oriented programs using Python for solving real-world problems.   |
|   |                                 |           | <b>CO4</b> | Apply modularity to programs.   |
| 7 | Universal Human Values          | 19A52301  | <b>CO1</b> | Students are expected to become more aware of themselves, and their surroundings (family, society, nature).   |
|   |                                 |           | <b>CO2</b> | They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.                              |
|   |                                 |           | <b>CO3</b> | They would have better critical ability.  |
|   |                                 |           | <b>CO4</b> | They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).  |
|   |                                 |           | <b>CO5</b> | 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. |
| 8 | Electrical Circuit Analysis Lab | 19A02401P | <b>CO1</b> | Understand and experimentally verify various resonance phenomenon.  |
|   |                                 |           | <b>CO2</b> | Understand and analyze various current locus diagrams.  |
|   |                                 |           | <b>CO3</b> | Apply and experimentally analyze two port network parameters.   |
| 9 | Electronic Circuits Lab         | 19A04406  | <b>CO1</b> | Analyze various amplifier circuits.   |
|   |                                 |           | <b>CO2</b> | Design multistage amplifiers.   |
|   |                                 |           | <b>CO3</b> | Design OPAMP based analog circuits.   |
|   |                                 |           | <b>CO4</b> | Understand working of logic gates.  |





Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                       |          |            |  |
|----|-----------------------|----------|------------|--|
|    |                       |          | <b>CO5</b> | Design and implement Combinational and Sequential logic circuits.  |
| 10 | Environmental Science | 19A99301 | <b>CO1</b> | Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources. |
|    |                       |          | <b>CO2</b> | Understand flow and bio-geo-chemical cycles and ecological pyramids.                                       |
|    |                       |          | <b>CO3</b> | Understand various causes of pollution and solid waste management and related preventive measures.         |
|    |                       |          | <b>CO4</b> | About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.    |
|    |                       |          | <b>CO5</b> | Casus of population explosion, value education and welfare programmes.                                     |





| <b>COURSE OUTCOMES</b>              |                         |                     | <b>REGULATION: R19</b>                               |  |
|-------------------------------------|-------------------------|---------------------|--|--|
| <b>YEAR/SEM: III B.TECH - I SEM</b> |                         |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                         | <b>Subject Name</b>     | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                   | AC Machines             | 19A02501T           | <b>CO1</b>   | Understand the basics of ac machine windings, construction, principle of working, equivalent circuit of induction and synchronous machines.  |
|                                     |                         |                     | <b>CO2</b>   | Analyze the phasor diagrams of induction and synchronous machine, parallel operation of alternators, synchronization and load division of synchronous generators.  |
|                                     |                         |                     | <b>CO3</b>   | Apply the concepts to determine V and inverted V curves and power circles of synchronous motor.  |
|                                     |                         |                     | <b>CO4</b>   | Analyze the various methods of starting in both induction and synchronous machines.  |
| 2                                   | Control Systems         | 19A02502            | <b>CO1</b>   | Understand the concepts of control systems classification, feedback effect, mathematical modelling, time response and frequency response characteristics, state space analysis.  |
|                                     |                         |                     | <b>CO2</b>   | Apply the concepts of Block diagram reduction, Signal flow graph method and state space formulation for obtaining mathematical and Root locus, Bode, Nyquist, Polar plots for stability calculations, controllability and observability and demonstrate the use of these techniques. |
|                                     |                         |                     | <b>CO3</b>   | Analyse time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.  |
|                                     |                         |                     | <b>CO4</b>   | Design and develop different compensators, controllers and their performance evaluation for various conditions. Implement them in solving various engineering applications.  |
| 3                                   | English Language Skills | 19A52601T           | <b>CO1</b>   | Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.   |
|                                     |                         |                     | <b>CO2</b>   | Apply grammatical structures to formulate sentences and correct word forms.  |
|                                     |                         |                     | <b>CO3</b>   | Analyze discourse markers to speak clearly on a specific topic in informal discussions.  |
|                                     |                         |                     | <b>CO4</b>   | Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.  |
|                                     |                         |                     | <b>CO5</b>   | Create a coherent paragraph interpreting a   |



|   |   |           |     |   |
|---|---|-----------|-----|---|
|   |   |           |     | figure/graph/chart/table.   |
| 4 | Electrical Machine Design                     | 19A02504  | CO1 | Understand various design factors, types of windings, choice of machine, selection and ratings.   |
|   |   |           | CO2 | Able to design DC machine based on specified rating.  |
|   |   |           | CO3 | Able to design 1- $\phi$ transformer based on specified rating.   |
|   |   |           | CO4 | Able to design 3- $\phi$ Induction machine based on specified rating.   |
|   |   |           | CO5 | Able to design 3- $\phi$ Synchronous machine based on specified rating.   |
| 5 | HVDC & FACTS                                  | 19A02503a | CO1 | The necessity of HVDC systems as emerging transmission networks.  |
|   |   |           | CO2 | Power Electronic devices to understand the necessity of reactive power compensation devices.  |
|   |   |           | CO3 | To obtain equivalent circuits of various HVDC system configurations   |
| 6 | Technical Communication & Presentation Skills | 19A52506a | CO1 | Understand the importance of effective technical communication.   |
|   |   |           | CO2 | Apply the knowledge of basic skills to become good orators.   |
|   |   |           | CO3 | Analyze non-verbal language suitable to different situations in professional life.  |
|   |   |           | CO4 | Evaluate different kinds of methods used for effective presentations.   |
|   |   |           | CO5 | Create trust among people and develop employability skills.   |
| 7 | AC Machines Lab                               | 19A02501P | CO1 | Analyze and apply load test, no-load and blocked-rotor tests for construction of circle diagram and equivalent circuit determination in a single phase induction motor. |
|   |   |           | CO2 | Predetermine regulation of a three-phase alternator by synchronous impedance & m.m.f methods.   |
|   |   |           | CO3 | Predetermine the regulation of Alternator by Zero Power Factor method $X_d$ and $X_q$ determination of salient pole synchronous machine.                                |
|   |   |           | CO4 | Evaluate and analyze V and inverted V curves of 3 phase synchronous motor.  |
| 8 | English Language Skills Lab                   | 19A52601P | CO1 | Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills  |



Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                                    |          |            |   |
|----|------------------------------------|----------|------------|---|
|    |                                    |          | <b>CO2</b> | Apply communication skills through various language learning activities.  |
|    |                                    |          | <b>CO3</b> | Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.    |
|    |                                    |          | <b>CO4</b> | Evaluate and exhibit acceptable etiquette essential in social and professional settings   |
|    |                                    |          | <b>CO5</b> | Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                            |
| 9  | Power Electronics & Simulation Lab | 19A02506 | <b>CO1</b> | Understand and analyze various characteristics of power electronic devices with gate firing circuits and forced commutation techniques. |
|    |                                    |          | <b>CO2</b> | Analyze the operation of single-phase half & fully-controlled converters and inverters with different types of loads.                   |
|    |                                    |          | <b>CO3</b> | Analyze the operation of DC-DC converters, single-phase AC Voltage controllers, cyclo converters with different loads.                  |
|    |                                    |          | <b>CO4</b> | Create and analyze various power electronic converters using PSPICE software.   |
| 10 | Research Methodology               | 19A99601 | <b>CO1</b> | Understand basic concepts and its methodologies.  |
|    |                                    |          | <b>CO2</b> | Demonstrate the knowledge of research processes.  |
|    |                                    |          | <b>CO3</b> | Read, comprehend and explain research articles in their academic discipline.  |
|    |                                    |          | <b>CO4</b> | Analyze various types of testing tools used in research.  |
|    |                                    |          | <b>CO5</b> | Design a research paper without any ethical issues.   |



| <b>COURSE OUTCOMES</b>               |                            |                     | <b>REGULATION: R19</b>                               |  |
|--------------------------------------|----------------------------|---------------------|--|--|
| <b>YEAR/SEM: III B.TECH - II SEM</b> |                            |                     | <b>BRANCH: EEE</b>                                   |  |
| <b>S.No</b>                          | <b>Subject Name</b>        | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                    | Signals & Systems          | 19A04301            | <b>CO1</b>   | Understand the mathematical description and representation of continuous-time and discrete-time signals and systems. Also understand the concepts of various transform techniques.   |
|                                      |                            |                     | <b>CO2</b>   | Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.  |
|                                      |                            |                     | <b>CO3</b>   | Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.  |
|                                      |                            |                     | <b>CO4</b>   | Classify the systems based on their properties and determine the response of them.   |
| 2                                    | Digital Computer Platforms | 19A02601T           | <b>CO1</b>   | Understand the basic architecture & pin diagram of 8086 microprocessor.  |
|                                      |                            |                     | <b>CO2</b>   | Assembly language programming to perform a given task, Interrupt service routines for all interrupt types.   |
|                                      |                            |                     | <b>CO3</b>   | Microprocessor and Microcontroller designing for various applications.   |
|                                      |                            |                     | <b>CO4</b>   | Write Assembly Language Programs for the Digital Signal Processors and use Interrupts for real-time control applications   |
|                                      |                            |                     | <b>CO5</b>   | Write Xilinx programming and understanding of Spartan FPGA board.  |
| 3                                    | Power System Analysis      | 19A02602            | <b>CO1</b>   | Remember and understand the concepts of per unit values, Y Bus and Z bus formation, load flow studies, symmetrical and unsymmetrical fault calculations.   |
|                                      |                            |                     | <b>CO2</b>   | Apply the concepts of good algorithm for the given power system network and obtain the converged load flow solution and experiment some of these methods using modern tools and examine the results.                               |
|                                      |                            |                     | <b>CO3</b>   | Analyse the symmetrical faults and unsymmetrical faults and done the fault calculations, analyse the stability of the system and improve the stability. Demonstrate the use of these techniques through good communication skills. |
|                                      |                            |                     | <b>CO4</b>   | Develop accurate algorithms for different  |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuram)

|   |   |           |            |   |
|---|---|-----------|------------|---|
|   |   |           |            | networks and determine load flow studies and zero, positive and negative sequence impedances to find fault calculations.                            |
|   |   |           | <b>CO5</b> | Design and select efficient Circuit Breakers to improve system stability. Implement them in resolving various day-to-day issues in a Power System.  |
| 4 | Power Quality                               | 19A02603a | <b>CO1</b> | Understand the basic concepts of different power quality issues and to mitigate them, principles of regulation of long duration voltage variations. |
|   |   |           | <b>CO2</b> | Analyze voltage disturbances and power transients that are occurring in power systems.  |
|   |   |           | <b>CO3</b> | Understand the concept of harmonics in the system and their effect on different power system equipment.   |
|   |   |           | <b>CO4</b> | Apply the knowledge about different power quality measuring and monitoring concepts.  |
| 5 | Soft Skills                                 | 19A52604a | <b>CO1</b> | Recognize the importance of verbal and non verbal skills.   |
|   |   |           | <b>CO2</b> | Develop the interpersonal and intrapersonal skills.   |
|   |   |           | <b>CO3</b> | Apply the knowledge in setting the SMART goals and achieve the set goals.   |
|   |   |           | <b>CO4</b> | Analyze difficult situations and solve the problems in stress-free environment  |
|   |   |           | <b>CO5</b> | Create trust among people and develop employability skills.   |
| 6 | Managerial Economics And Financial Analysis | 19A52602b | <b>CO1</b> | Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets  |
|   |   |           | <b>CO2</b> | Apply concepts of production, cost and revenues for effective business decisions.   |
|   |   |           | <b>CO3</b> | Students can analyze how to invest their capital and maximize returns.  |
|   |   |           | <b>CO4</b> | Evaluate the capital budgeting techniques.  |
|   |   |           | <b>CO5</b> | Prepare the accounting statements and evaluate the financial performance of business entity.  |
| 7 | Constitution of India                       | 19A99501  | <b>CO1</b> | Understand historical background of the constitution making and its importance for building a democratic India.                                     |
|   |   |           | <b>CO2</b> | Understand the functioning of three wings of the government i.e., executive, legislative and judiciary.   |
|   |   |           | <b>CO3</b> | Understand the value of the fundamental rights and duties for becoming good citizen of India.   |
|   |   |           | <b>CO4</b> | Analyze the decentralization of power between   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                                  |           |            |  |
|---|----------------------------------|-----------|------------|--|
|   |                                  |           |            | central, state and local self government.  |
|   |                                  |           | <b>CO5</b> | Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.   |
| 6 | Control Systems & Simulation Lab | 19A02605  | <b>CO1</b> | Get the knowledge of feedback control and transfer function of DC servo motor.   |
|   |                                  |           | <b>CO2</b> | Model the systems and able to design the controllers and compensators.   |
|   |                                  |           | <b>CO3</b> | Get the knowledge about the effect of poles and zeros location on transient and steady state behaviour of second order systems and can implement them to practical systems and MATLAB. |
|   |                                  |           | <b>CO4</b> | Determine the performance and time domain specifications of first and second order Systems.  |
| 9 | Digital Computer Platforms Lab   | 19A02601P | <b>CO1</b> | Assembly language programming on 8086 Microprocessors.   |
|   |                                  |           | <b>CO2</b> | Interfacing of various devices with 8086.  |
|   |                                  |           | <b>CO3</b> | MASAM Programming.   |
|   |                                  |           | <b>CO4</b> | Interfacing 8051 Microcontroller with its peripheral devices.  |





| <b>COURSE OUTCOMES</b>             |                                  |                     | <b>REGULATION: R19</b>                               |   |
|------------------------------------|----------------------------------|---------------------|--|---|
| <b>YEAR/SEM: IV B.TECH - I SEM</b> |                                  |                     | <b>BRANCH: EEE</b>                                   |   |
| <b>S.No</b>                        | <b>Subject Name</b>              | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |   |
| 1                                  | Measurements & Sensors           | 19A02701            | <b>CO1</b>   | Able to Understand the working of various instruments and equipments used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and distribution sectors. |
|                                    |                                  |                     | <b>CO2</b>   | Able to analyze and solve the varieties of problems and issues coming up in the vast field of electrical measurements.  |
|                                    |                                  |                     | <b>CO3</b>   | Analyse the different operation of extension range ammeters and voltmeters, DC and AC bridge for measurement of parameters and different characteristics of periodic and aperiodic signals using CRO.   |
|                                    |                                  |                     | <b>CO4</b>   | Design and development of various voltage and current measuring meters and the varieties of issues coming up in the field of electrical measurements.   |
| 2                                  | Power System Protection          | 19A02702            | <b>CO1</b>   | Distinguish between the principles of operation of electromagnetic relays, static relays and microprocessor based relays.   |
|                                    |                                  |                     | <b>CO2</b>   | Determine the unprotected percentage of generator winding under fault occurrence.   |
|                                    |                                  |                     | <b>CO3</b>   | Design the protection system for transformers.  |
|                                    |                                  |                     | <b>CO4</b>   | Identify various types of the relays in protecting feeders, lines and bus bars.   |
|                                    |                                  |                     | <b>CO5</b>   | Solve numerical problems for arc interruption and recovery in circuit breakers.   |
| 3                                  | Power System Operation & Control | 19A02703a           | <b>CO1</b>   | To be able to understand to deal with problems in Power System as Power System Engineer.  |
|                                    |                                  |                     | <b>CO2</b>   | To be able to Understand to deal with AGC problems in Power System.   |
|                                    |                                  |                     | <b>CO3</b>   | To be able to understand to deal the problems in hydro electric and hydro thermal problems.   |
|                                    |                                  |                     | <b>CO4</b>   | To understand the complexity of reactive power control problems and to deal with them.  |
|                                    |                                  |                     | <b>CO5</b>   | To understand the necessity of deregulation aspects and demand side management problems in the modern power system era.   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |   |           |     |   |
|---|---|-----------|-----|---|
| 4 | Introduction to Micro Controllers & Application | 19A04704a | CO1 | Understand the importance of Microcontroller and Acquire the knowledge of Architecture of 8051 Microcontroller.   |
|   |   |           | CO2 | Apply and Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to using 8051 I/O ports.  |
|   |   |           | CO3 | Develop the 8051 Assembly level programs using 8051 instruction set.  |
|   |   |           | CO4 | Design the Interrupt system, operation of Timers/Counters and Serial port of 8051.  |
| 5 | Management Science                              | 19A52701b | CO1 | Understand the concepts & principles of management and designs of organization in a practical world.  |
|   |   |           | CO2 | Apply the knowledge of Work-study principles & Quality Control techniques in Industry.  |
|   |   |           | CO3 | Analyze the concepts of HRM in Recruitment, Selection and Training & Development.   |
|   |   |           | CO4 | Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.  |
|   |   |           | CO5 | Create Modern technology in management science.   |
| 6 | Power System & Simulation Lab                   | 19A02705  | CO1 | Get the practical knowledge on calculation of sequence impedance, fault currents, voltages and sub transient reactance's. Get the practical knowledge on how to draw the equivalent circuit of three winding transformer. |
|   |   |           | CO2 | Get the knowledge on development of MATLAB program for formation of Y and Z buses.  |
|   |   |           | CO3 | Get the knowledge on development of MATLAB programs for Gauss-Seidel and Fast Decouple Load Flow studies.   |
|   |   |           | CO4 | Get the knowledge on development of SIMULINK model for single area load frequency problem.  |
| 7 | Measurements Lab                                | 19A02706  | CO1 | Calibrate various electrical measuring instruments.   |
|   |   |           | CO2 | Accurately determine the values of inductance and capacitance using AC bridges.   |
|   |   |           | CO3 | Compute the coefficient of coupling between two coupled coils.  |
|   |   |           | CO4 | Accurately determine the values of very low resistances.  |



Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

| <b>COURSE OUTCOMES</b>              |                                |                     | <b>REGULATION: R19</b>                               |   |
|-------------------------------------|--------------------------------|---------------------|--|---|
| <b>YEAR/SEM: IV B.TECH - II SEM</b> |                                |                     | <b>BRANCH: EEE</b>                                   |   |
| <b>S.No</b>                         | <b>Subject Name</b>            | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |   |
| 1                                   | Intelligent Control Techniques | 19A02801c           | <b>CO1</b>   | To get familiarity of various Intelligent Control Techniques.   |
|                                     |                                |                     | <b>CO2</b>   | To be able to design the controllers and estimators using ANN.  |
|                                     |                                |                     | <b>CO3</b>   | To be able to model and develop control schemes with Fuzzy Logic rule bases.  |
|                                     |                                |                     | <b>CO4</b>   | To be able to implement an evolutionary algorithm suitable to optimize and design a given system specifications.                      |
|                                     |                                |                     | <b>CO5</b>   | To be able to use MATLAB tool boxes for implementation of various ICTs for system modelling, control schemes and to design estimators |
| 2                                   | Disaster Management            | 19A01802a           | <b>CO1</b>   | Affirm the usefulness of integrating management principles in disaster mitigation work.   |
|                                     |                                |                     | <b>CO2</b>   | Distinguish between the different approaches needed to manage pre- during and post disaster periods.                                  |
|                                     |                                |                     | <b>CO3</b>   | Explain the process of risk management.   |
|                                     |                                |                     | <b>CO4</b>   | Relate to risk transfer.  |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

# **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**



| COURSE OUTCOMES            |                               |              | REGULATION: R19                               |  |
|----------------------------|-------------------------------|--------------|---|--|
| YEAR/SEM: I B.TECH - I SEM |                               |              | BRANCH: CSE                                   |  |
| S.No                       | Subject Name                  | Subject Code | Course Outcomes (CO): Student will be able to |  |
| 1                          | Algebra and Calculus          | 19A54101     | CO1   | Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.   |
|                            |                               |              | CO2   | Utilize mean value theorems to real life problems.   |
|                            |                               |              | CO3   | Familiarize with functions of several variables which is useful in optimization.   |
|                            |                               |              | CO4   | Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems. |
|                            |                               |              | CO5   | Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions.                        |
| 2                          | Chemistry                     | 19A51102T    | CO1   | compare the materials of construction for battery and electrochemical sensors.   |
|                            |                               |              | CO2   | Explain the preparation, properties, and applications of thermoplastics &thermosettings, elastomers & conducting polymers.                       |
|                            |                               |              | CO3   | Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.  |
|                            |                               |              | CO4   | Apply the principle of supramolecular chemistry in application of molecular machines and switches.   |
| 3                          | Problem Solving & Programming | 19A05101T    | CO1   | Construct his own computer using parts.  |
|                            |                               |              | CO2   | Recognize the importance of programming language independent constructs.   |
|                            |                               |              | CO3   | Solve computational problems.  |
|                            |                               |              | CO4   | Select the features of C language appropriate for solving a problem.   |
|                            |                               |              | CO5   | Design computer programs for real world problems.  |
|                            |                               |              | CO6   | Organize the data which is more appropriated for solving a problem.  |
| 4                          | Engineering Graphics Lab      | 19A03102     | CO1   | Draw various curves applied in engineering.  |
|                            |                               |              | CO2   | Show projections of solids and sections graphically.   |
|                            |                               |              | CO3   | Draw the development of surfaces of solids.  |
|                            |                               |              | CO4   | Use computers as a drafting tool.  |
|                            |                               |              | CO5   | Draw isometric and orthographic drawings   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                                   |           |            |   |
|---|-----------------------------------|-----------|------------|---|
|   |                                   |           |            | using CAD packages.   |
| 5 | Engineering Workshop              | 19A03101  | <b>CO1</b> | Apply wood working skills in real world applications.                                 |
|   |                                   |           | <b>CO2</b> | Build different parts with metal sheets in real world applications.                   |
|   |                                   |           | <b>CO3</b> | Apply fitting operations in various applications.                                     |
|   |                                   |           | <b>CO4</b> | Apply different types of basic electric circuit connections.                          |
|   |                                   |           | <b>CO5</b> | Demonstrate soldering and brazing.  |
| 6 | Chemistry Lab                     | 19A51102P | <b>CO1</b> | determine the cell constant and conductance of solutions.                             |
|   |                                   |           | <b>CO2</b> | prepare advanced polymer materials.   |
|   |                                   |           | <b>CO3</b> | measure the strength of an acid present in secondary batteries.                       |
|   |                                   |           | <b>CO4</b> | analyse the IR and NMR of some organic compounds.                                     |
| 7 | Problem Solving & Programming Lab | 19A05101P | <b>CO1</b> | Construct a Computer given its parts.   |
|   |                                   |           | <b>CO2</b> | Select the right control structure for solving the problem.                           |
|   |                                   |           | <b>CO3</b> | Analyze different sorting algorithms.   |
|   |                                   |           | <b>CO4</b> | Design solutions for computational problems.  |
|   |                                   |           | <b>CO5</b> | Develop C programs which utilize the memory efficiently using programming constructs. |





| <b>COURSE OUTCOMES</b>             |  |                     | <b>REGULATION: R19</b>                               |  |
|------------------------------------|--|---------------------|--|--|
| <b>YEAR/SEM: I B.TECH - II SEM</b> |  |                     | <b>BRANCH: CSE</b>                                   |  |
| <b>S.No</b>                        | <b>Subject Name</b>                          | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                  | Basic Electrical and Electronics Engineering | 19A02201T           | <b>CO1</b>   | Apply concepts of KVL/KCL in solving DC circuits.  |
|                                    |  |                     | <b>CO2</b>   | Choose correct rating of a transformer for a specific application.                         |
|                                    |  |                     | <b>CO3</b>   | Illustrate working principles of induction motor - DC Motor.                               |
|                                    |  |                     | <b>CO4</b>   | Identify type of electrical machine based on their operation.                              |
|                                    |  |                     | <b>CO5</b>   | Describe working principles of protection devices used in electrical circuits.             |
| 2                                  | Probability and Statistics                   | 19A54202            | <b>CO1</b>   | Make use of the concepts of probability and their applications.                            |
|                                    |  |                     | <b>CO2</b>   | Apply discrete and continuous probability distributions.                                   |
|                                    |  |                     | <b>CO3</b>   | Classify the concepts of data science and its importance.                                  |
|                                    |  |                     | <b>CO4</b>   | Interpret the association of characteristics and through correlation and regression tools. |
|                                    |  |                     | <b>CO5</b>   | Design the components of a classical hypothesis test.                                      |
|                                    |  |                     | <b>CO6</b>   | Infer the statistical inferential methods based on small and large sampling tests.         |
| 3                                  | Applied Physics                              | 19A56101T           | <b>CO1</b>   | Identify the wave properties of light and the interaction of energy with the matter.       |
|                                    |  |                     | <b>CO2</b>   | Apply electromagnetic wave propagation in different guided media.                          |
|                                    |  |                     | <b>CO3</b>   | Asses the electromagnetic wave propagation and its power in different media.               |
|                                    |  |                     | <b>CO4</b>   | Calculate conductivity of semiconductors.  |
|                                    |  |                     | <b>CO5</b>   | Interpret the difference between normal conductor and superconductor.                      |
|                                    |  |                     | <b>CO6</b>   | Demonstrate the application of nano materials.   |
| 4                                  | Data Structures                              | 19A05201T           | <b>CO1</b>   | Select Appropriate Data Structure for solving a real world problem.                        |
|                                    |  |                     | <b>CO2</b>   | Select appropriate file organization technique depending on the processing to be done.     |
|                                    |  |                     | <b>CO3</b>   | Construct Indexes for Databases.   |
|                                    |  |                     | <b>CO4</b>   | Analyse the Algorithms.  |
|                                    |  |                     | <b>CO5</b>   | Develop Algorithm for Sorting large files of data.   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |  |           |     |  |
|---|--|-----------|-----|--|
| 5 | Communicative English - I                      | 19A52101T | CO1 | Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English. |
|   |  |           | CO2 | Apply grammatical structures to formulate sentences and correct word forms.  |
|   |  |           | CO3 | Analyze discourse markers to speak clearly on a specific topic in informal discussions.  |
|   |  |           | CO4 | Evaluate reading/listening texts and to write summaries based on global.   |
|   |  |           | CO5 | Create a coherent paragraph interpreting a figure/graph/chart/table.   |
| 6 | Computer Science and Engineering Workshop      | 19A05202  | CO1 | Construct a computer from its parts and prepare it for use.  |
|   |  |           | CO2 | Develop Documents using Word processors.   |
|   |  |           | CO3 | Develop presentations using the presentation tool.   |
|   |  |           | CO4 | Perform computations using spreadsheet tool  |
|   |  |           | CO5 | Connect computer using wired and wireless connections.   |
|   |  |           | CO6 | Design Graphics, Videos and Web pages.   |
|   |  |           | CO7 | Connect things to computers.   |
| 7 | Communicative English - I Lab                  | 19A52101P | CO1 | To remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills                              |
|   |  |           | CO2 | To apply communication skills through various language learning activities.  |
|   |  |           | CO3 | To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.        |
|   |  |           | CO4 | To evaluate and exhibit acceptable etiquette essential in social and professional settings   |
|   |  |           | CO5 | To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                                |
| 8 | Basic Electrical & Electronics Engineering Lab | 19A02201P | CO1 | Verify Kirchoff's Laws & Superposition theorem.  |
|   |  |           | CO2 | Perform testing on AC and DC Machines.   |
|   |  |           | CO3 | Study I – V Characteristics of PV Cell.  |
|   |  |           | CO4 | Describe construction, working and characteristics of diodes, transistors and operational amplifiers.  |
|   |  |           | CO5 | Demonstrate how electronic devices are used for applications such as rectification, switching and amplification.                               |



Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                     |           |            |   |
|----|---------------------|-----------|------------|---|
|    |                     |           | <b>CO6</b> | Build different building blocks in digital electronics using logic gates.                           |
|    |                     |           | <b>CO7</b> | Explain functionality of flip-flops, shift registers and counters for data processing Applications. |
|    |                     |           | <b>CO8</b> | Explain functioning of various communication systems.   |
| 9  | Applied Physics Lab | 19A56101P | <b>CO1</b> | Operate optical instruments like microscope and spectrometer.                                       |
|    |                     |           | <b>CO2</b> | Determine thickness of a hair/paper with the concept of interference.                               |
|    |                     |           | <b>CO3</b> | Estimate the wavelength of different colors using diffraction grating and resolving Power.          |
|    |                     |           | <b>CO4</b> | Plot the intensity of the magnetic field of circular coil carrying current with distance            |
|    |                     |           | <b>CO5</b> | Evaluate the acceptance angle of an optical fiber and numerical aperture.                           |
|    |                     |           | <b>CO6</b> | Determine magnetic susceptibility of the material and its losses by B-H curve.                      |
|    |                     |           | <b>CO7</b> | Determine the resistivity of the given semiconductor using four probe method.                       |
|    |                     |           | <b>CO8</b> | Identify the type of semiconductor i.e., n-type or p-type using hall effect.                        |
|    |                     |           | <b>CO9</b> | Calculate the band gap of a given semiconductor.  |
| 10 | Data Structures Lab | 19A05201P | <b>CO1</b> | Select the data structure appropriate for solving the problem.                                      |
|    |                     |           | <b>CO2</b> | Implement searching and sorting algorithms.   |
|    |                     |           | <b>CO3</b> | Design new data types.  |
|    |                     |           | <b>CO4</b> | Illustrate the working of stack and queue.  |
|    |                     |           | <b>CO5</b> | Organize the data in the form of files.   |



| COURSE OUTCOMES             |  |              | REGULATION: R19                               |  |
|-----------------------------|--|--------------|---|--|
| YEAR/SEM: II B.TECH - I SEM |  |              | BRANCH: CSE                                   |  |
| S.No                        | Subject Name                                 | Subject Code | Course Outcomes (CO): Student will be able to |  |
| 1                           | Mathematical Foundations of Computer Science | 19A54303     | CO1   | Evaluate elementary mathematical arguments and identify fallacious reasoning.  |
|                             |  |              | CO2   | Understand the properties of Compatibility, Equivalence and Partial Ordering relations, Lattices and Has see Diagrams. |
|                             |  |              | CO3   | Understand the general properties of Algebraic Systems, Semi Groups, Monoids and Groups.                               |
|                             |  |              | CO4   | Design solutions for problems using breadth first and depth first search techniques.                                   |
|                             |  |              | CO5   | Solve the homogeneous and non-homogeneous recurrence relations.  |
|                             |  |              | CO6   | Apply the concepts of functions to identify the Isomorphic Graphs.   |
|                             |  |              | CO7   | Identify Euler Graphs, Hamilton Graph and Chromatic Number of a graph.   |
| 2                           | Digital Logic Design                         | 19A05301     | CO1   | Analyze the number systems and codes.  |
|                             |  |              | CO2   | Decide the Boolean expressions using Minimization methods.   |
|                             |  |              | CO3   | Design the sequential and combinational circuits.  |
|                             |  |              | CO4   | Apply state reduction methods to solve sequential circuits.  |
|                             |  |              | CO5   | Describe various types of memories.  |
| 3                           | Design Thinking                              | 19A99304     | CO1   | Generate and develop different design ideas.   |
|                             |  |              | CO2   | Appreciate the innovation and benefits of design thinking.   |
|                             |  |              | CO3   | Experience the design thinking process in IT and agile software development.   |
|                             |  |              | CO4   | Understand design techniques related to variety of software services   |
| 4                           | Database Management Systems                  | 19A05302T    | CO1   | Design a database for a real world information system.   |
|                             |  |              | CO2   | Define transactions which preserve the integrity of the database.  |
|                             |  |              | CO3   | Generate tables for a database   |
|                             |  |              | CO4   | Organize the data to prevent redundancy  |
|                             |  |              | CO5   | Pose queries to retrieve the information from database.  |
| 5                           |  | 19A05303T    | CO1   | To solve real world problems using OOP   |



|   |  |           |            |   |
|---|--|-----------|------------|---|
|   | Object Oriented Programming Through Java |           |            | techniques.   |
|   |  |           | <b>CO2</b> | To apply code reusability through inheritance, packages and interfaces  |
|   |  |           | <b>CO3</b> | To solve problems using java collection framework and I/O classes.  |
|   |  |           | <b>CO4</b> | To develop applications by using parallel streams for better performance.   |
|   |  |           | <b>CO5</b> | To develop applets for web applications.  |
|   |  |           | <b>CO6</b> | To build GUIs and handle events generated by user interactions.   |
|   |  |           | <b>CO7</b> | To use the JDBC API to access database  |
| 6 | Python Programming                       | 19A05304T | <b>CO1</b> | Apply the features of Python language in various real applications.   |
|   |  |           | <b>CO2</b> | Select appropriate data structure of Python for solving a problem.  |
|   |  |           | <b>CO3</b> | Design object oriented programs using Python for solving real-world problems.   |
|   |  |           | <b>CO4</b> | Apply modularity to programs.   |
| 7 | Universal Human Values                   | 19A52301  | <b>CO1</b> | Students are expected to become more aware of themselves, and their surroundings (family, society, nature).   |
|   |  |           | <b>CO2</b> | They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.                              |
|   |  |           | <b>CO3</b> | They would have better critical ability.  |
|   |  |           | <b>CO4</b> | They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).  |
|   |  |           | <b>CO5</b> | 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. |
| 8 | Database Management Systems Lab          | 19A05302P | <b>CO1</b> | Design database for any real world problem.   |
|   |  |           | <b>CO2</b> | Implement PL/SQL programs.  |
|   |  |           | <b>CO3</b> | Define SQL queries.   |
|   |  |           | <b>CO4</b> | Decide the constraints.   |
|   |  |           | <b>CO5</b> | Investigate for data inconsistency.   |
| 9 | Object Oriented Programming Through      | 19A05303P | <b>CO1</b> | Recognize the Java programming environment.   |
|   |  |           | <b>CO2</b> | Develop efficient programs using multi threading.   |
|   |  |           | <b>CO3</b> | Design reliable programs using Java exception   |



Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|    |                        |           |            |  |
|----|------------------------|-----------|------------|--|
|    | Java Lab               |           |            | handling features.   |
|    |                        |           | <b>CO4</b> | Extend the programming functionality supported by Java.  |
|    |                        |           | <b>CO5</b> | Select appropriate programming construct to solve a problem.   |
| 10 | Python Programming Lab | 19A05304P | <b>CO1</b> | Design solutions to mathematical problems.   |
|    |                        |           | <b>CO2</b> | Organize the data for solving the problem.   |
|    |                        |           | <b>CO3</b> | Develop Python programs for numerical and text based problems.   |
|    |                        |           | <b>CO4</b> | Select appropriate programming construct for solving the problem.  |
|    |                        |           | <b>CO5</b> | Illustrate object oriented concepts.   |
| 11 | Environmental Science  | 19A99301  | <b>CO1</b> | Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources. |
|    |                        |           | <b>CO2</b> | Understand flow and bio-geo- chemical cycles and ecological pyramids.                                      |
|    |                        |           | <b>CO3</b> | Understand various causes of pollution and solid waste management and related preventive measures.         |
|    |                        |           | <b>CO4</b> | About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.    |
|    |                        |           | <b>CO5</b> | Casus of population explosion, value education and welfare programmes.                                     |





| <b>COURSE OUTCOMES</b>              |                                   |                     | <b>REGULATION: R19</b>                               |  |
|-------------------------------------|-----------------------------------|---------------------|--|--|
| <b>YEAR/SEM: II B.TECH - II SEM</b> |                                   |                     | <b>BRANCH: CSE</b>                                   |  |
| <b>S.No</b>                         | <b>Subject Name</b>               | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                   | Number Theory and Applications    | 19A54401            | <b>CO1</b>   | Understand number theory and its properties.   |
|                                     |                                   |                     | <b>CO2</b>   | Understand principles on congruences   |
|                                     |                                   |                     | <b>CO3</b>   | Develop the knowledge to apply various applications.   |
|                                     |                                   |                     | <b>CO4</b>   | Develop various encryption methods and its applications.   |
| 2                                   | Computer Organization             | 19A05401            | <b>CO1</b>   | Understand computer architecture concepts related to design of modern processors, memories and I/Os.   |
|                                     |                                   |                     | <b>CO2</b>   | Identify the hardware requirements for cache memory and virtual memory.  |
|                                     |                                   |                     | <b>CO3</b>   | Design algorithms to exploit pipelining and multiprocessors.   |
|                                     |                                   |                     | <b>CO4</b>   | • Understand the importance and tradeoffs of different types of memories.  |
|                                     |                                   |                     | <b>CO5</b>   | Identify pipeline hazards and possible solutions to those hazards.   |
| 3                                   | Design and Analysis of Algorithms | 19A05402T           | <b>CO1</b>   | Determine the time complexity of an algorithm by solving the corresponding recurrence Equation.  |
|                                     |                                   |                     | <b>CO2</b>   | Apply the Divide and Conquer strategy to solve searching, sorting and matrix multiplication problems.  |
|                                     |                                   |                     | <b>CO3</b>   | Analyze the efficiency of Greedy and Dynamic Programming design techniques to solve the optimization problems.                                       |
|                                     |                                   |                     | <b>CO4</b>   | Apply Backtracking technique for solving constraint satisfaction problems.   |
|                                     |                                   |                     | <b>CO5</b>   | Analyze the LC and FIFO branch and bound solutions for optimization problems, and compare the time complexities with Dynamic Programming techniques. |
|                                     |                                   |                     | <b>CO6</b>   | Define and Classify deterministic and Non-deterministic algorithms; P, NP, NP –hard and NP-complete classes of problems.                             |
| 4                                   | Entrepreneurship                  | 19A52401            | <b>CO1</b>   | Design business model and business plan.   |
|                                     |                                   |                     | <b>CO2</b>   | Demonstrate the Venture in front of investors.   |
|                                     |                                   |                     | <b>CO3</b>   | Build the team for a start-up  |
|                                     |                                   |                     | <b>CO4</b>   | Illustrate successful cases of start-ups   |
|                                     |                                   |                     | <b>CO5</b>   | Develop strategies for market survey   |
| 5                                   | Operating Systems                 | 19A05403T           | <b>CO1</b>   | Realize how applications interact with the   |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                          |           |             |  |
|---|--------------------------|-----------|-------------|--|
|   |                          |           |             | operating system.  |
|   |                          |           | <b>CO2</b>  | Analyze the functioning of a kernel in an Operating system.  |
|   |                          |           | <b>CO3</b>  | Summarize resource management in operating systems.  |
|   |                          |           | <b>CO4</b>  | Analyze various scheduling algorithms.   |
|   |                          |           | <b>CO5</b>  | Examine concurrency mechanism in Operating Systems.  |
|   |                          |           | <b>CO6</b>  | Apply memory management techniques in design of operating systems  |
|   |                          |           | <b>CO7</b>  | Understand the functionality of file system  |
|   |                          |           | <b>CO8</b>  | Compare and contrast memory management techniques.   |
|   |                          |           | <b>CO9</b>  | Understand the deadlock prevention and avoidance.  |
|   |                          |           | <b>CO10</b> | Perform administrative tasks on Linux based systems.   |
| 6 | Software Engineering     | 19A05404T | <b>CO1</b>  | Obtain basic software life cycle activity skills.  |
|   |                          |           | <b>CO2</b>  | Design software requirements specification for given problems.   |
|   |                          |           | <b>CO3</b>  | Implement structure, object oriented analysis and design for given problems.   |
|   |                          |           | <b>CO4</b>  | Design test cases for given problems.  |
|   |                          |           | <b>CO5</b>  | Apply quality management concepts at the application level   |
| 7 | Operating Systems Lab    | 19A05403P | <b>CO1</b>  | Trace different CPU Scheduling algorithm.  |
|   |                          |           | <b>CO2</b>  | Implement Bankers Algorithms to Avoid and prevent the Dead Lock.   |
|   |                          |           | <b>CO3</b>  | Evaluate Page replacement algorithms.  |
|   |                          |           | <b>CO4</b>  | Illustrate the file organization techniques.   |
|   |                          |           | <b>CO5</b>  | Illustrate shared memory process.  |
|   |                          |           | <b>CO6</b>  | Design new scheduling algorithms.  |
| 8 | Software Engineering Lab | 19A05404P | <b>CO1</b>  | Acquaint with historical and modern software methodologies.  |
|   |                          |           | <b>CO2</b>  | Understand the phases of software projects and practice the activities of each phase.                                  |
|   |                          |           | <b>CO3</b>  | Practice clean coding.   |
|   |                          |           | <b>CO4</b>  | Take part in project management.   |
|   |                          |           | <b>CO5</b>  | Adopt skills such as distributed version control, unit testing, integration testing, build management, and deployment. |
| 9 | Biology For Engineers    | 19A99302  | <b>CO1</b>  | Explain about cells and their structure and function. Different types of cells and basics for                          |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|  |  |  |            |   |
|--|--|--|------------|---|
|  |  |  |            | classification of living Organisms.   |
|  |  |  | <b>CO2</b> | Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry. |
|  |  |  | <b>CO3</b> | Briefly about human physiology.   |
|  |  |  | <b>CO4</b> | Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.           |



| <b>COURSE OUTCOMES</b>              |   |                     | <b>REGULATION: R19</b>                               |  |
|-------------------------------------|---|---------------------|--|--|
| <b>YEAR/SEM: III B.TECH - I SEM</b> |   |                     | <b>BRANCH: CSE</b>                                   |  |
| <b>S.No</b>                         | <b>Subject Name</b>                       | <b>Subject Code</b> | <b>Course Outcomes (CO): Student will be able to</b> |  |
| 1                                   | Formal Languages and Automata Theory      | 19A05501            | <b>CO1</b>   | Explain formal machines, languages and computations.                             |
|                                     |   |                     | <b>CO2</b>   | Design finite state machines for acceptance of strings.                          |
|                                     |   |                     | <b>CO3</b>   | Develop context free grammars for formal languages.                              |
|                                     |   |                     | <b>CO4</b>   | Build pushdown automata for context free grammars.                               |
|                                     |   |                     | <b>CO5</b>   | Apply Turing machine for solving problems.                                       |
|                                     |   |                     | <b>CO6</b>   | Validate decidability and undecidability.  |
| 2                                   | Artificial Intelligence                   | 19A05502T           | <b>CO1</b>   | Apply searching techniques for solving a problem.                                |
|                                     |   |                     | <b>CO2</b>   | Design Intelligent Agents.   |
|                                     |   |                     | <b>CO3</b>   | Develop Natural Language Interface for Machines.                                 |
|                                     |   |                     | <b>CO4</b>   | Design mini robots.  |
|                                     |   |                     | <b>CO5</b>   | Summarize past, present and future of Artificial Intelligence.                   |
| 3                                   | Object Oriented Analysis Design & Testing | 19A05503T           | <b>CO1</b>   | Analyze the problem from object oriented perspective.                            |
|                                     |   |                     | <b>CO2</b>   | Model complex systems using UML Diagrams.  |
|                                     |   |                     | <b>CO3</b>   | Choose the suitable design patterns in software design.                          |
|                                     |   |                     | <b>CO4</b>   | Adapt Object-Oriented Design Principles.   |
|                                     |   |                     | <b>CO5</b>   | Identify the challenges in testing object-oriented software.                     |
| 4                                   | Computer Networks                         | 19A05504T           | <b>CO1</b>   | Identify the software and hardware components of a Computer network.             |
|                                     |   |                     | <b>CO2</b>   | Develop new routing, and congestion control algorithms.                          |
|                                     |   |                     | <b>CO3</b>   | Assess critically the existing routing protocols.                                |
|                                     |   |                     | <b>CO4</b>   | Explain the functionality of each layer of a computer network .                  |
|                                     |   |                     | <b>CO5</b>   | Choose the appropriate transport protocol based on the application requirements. |
| 5                                   | Data Ware Housing & Data Mining           | 19A05505A           | <b>CO1</b>   | Design a Data warehouse system and perform business analysis with OLAP tools.    |
|                                     |   |                     | <b>CO2</b>   | Apply suitable pre-processing and visualization techniques for data analysis.    |



|    |   |           |            |   |
|----|---|-----------|------------|---|
|    |   |           | <b>CO3</b> | Apply frequent pattern and association rule mining techniques for data analysis.  |
|    |   |           | <b>CO4</b> | Design appropriate classification and clustering techniques for data analysis.  |
|    |   |           | <b>CO5</b> | Infer knowledge from raw data.  |
| 6  | Technical Communication & Presentation Skills | 19A52506A | <b>CO1</b> | Understand the importance of effective technical communication.   |
|    |   |           | <b>CO2</b> | Apply the knowledge of basic skills to become good orators.   |
|    |   |           | <b>CO3</b> | Analyze non-verbal language suitable to different situations in professional life.  |
|    |   |           | <b>CO4</b> | Evaluate different kinds of methods used for effective presentations.   |
|    |   |           | <b>CO5</b> | Create trust among people and develop employability skills.   |
| 7  | Artificial Intelligence Laboratory            | 19A05502P | <b>CO1</b> | Implement search algorithms.  |
|    |   |           | <b>CO2</b> | Solve Artificial intelligence problems.   |
|    |   |           | <b>CO3</b> | Design chatbot and virtual assistant.   |
| 8  | Computer Networks Laboratory                  | 19A05504P | <b>CO1</b> | Design scripts for Wired network simulation.  |
|    |   |           | <b>CO2</b> | Design scripts of static and mobile wireless networks simulation.   |
|    |   |           | <b>CO3</b> | Analyze the data traffic using tools.   |
|    |   |           | <b>CO4</b> | Design JAVA programs for client-server communication.   |
|    |   |           | <b>CO5</b> | Construct a wired and wireless networks using the real hardware.  |
| 9  | Object Oriented Analysis Design & Testing Lab | 19A05503T | <b>CO1</b> | Design use case, sequence and collaboration diagrams.   |
|    |   |           | <b>CO2</b> | Develop the different models to document an Object-oriented design.   |
|    |   |           | <b>CO3</b> | Demonstrate class level and system integration testing.   |
| 10 | Constitution of India                         | 19A99501  | <b>CO1</b> | Understand historical background of the constitution making and its importance for building a democratic India.               |
|    |   |           | <b>CO2</b> | Understand the functioning of three wings of the government ie., executive, legislative and judiciary.                        |
|    |   |           | <b>CO3</b> | Understand the value of the fundamental rights and duties for becoming good citizen of India.                                 |
|    |   |           | <b>CO4</b> | Analyze the decentralization of power between central, state and local self government.                                       |
|    |   |           | <b>CO5</b> | Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining |



|                                      |                                   |              |   | democracy.   |
|--------------------------------------|-----------------------------------|--------------|---|--|
| <b>COURSE OUTCOMES</b>               |                                   |              | <b>REGULATION: R19</b>                        |  |
| <b>YEAR/SEM: III B.TECH - II SEM</b> |                                   |              | <b>BRANCH: CSE</b>                            |  |
| S.No                                 | Subject Name                      | Subject Code | Course Outcomes (CO): Student will be able to |  |
| 1                                    | Cryptography & Network Security   | 19A05601     | CO1   | Identify various type of vulnerabilities of a computer network.  |
|                                      |                                   |              | CO2   | Outline various security algorithms.   |
|                                      |                                   |              | CO3   | Design secure systems.   |
|                                      |                                   |              | CO4   | Investigate the threats and identify the solutions for threats.  |
| 2                                    | Big Data Analytics                | 19A05602T    | CO1   | Explain the concepts and challenges of big data.   |
|                                      |                                   |              | CO2   | Determine why existing technologies are inadequate to analyze the large data.  |
|                                      |                                   |              | CO3   | Outline the operations viz. Collect, manage, store,query,&analyze various forms of big data.   |
|                                      |                                   |              | CO4   | Apply large-scale analytic tools to solve some of the open big data problems.  |
|                                      |                                   |              | CO5   | Analyze the impact of big data for business decisions and strategies.  |
|                                      |                                   |              | CO6   | Design different big data applications.  |
| 3                                    | English Language Skills           | 19A52601T    | CO1   | Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English. |
|                                      |                                   |              | CO2   | Apply grammatical structures to formulate sentences and correct word forms   |
|                                      |                                   |              | CO3   | Analyze discourse markers to speak clearly on a specific topic in informal discussions   |
|                                      |                                   |              | CO4   | Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.  |
|                                      |                                   |              | CO5   | Create a coherent paragraph interpreting a figure/graph/chart/table.   |
| 4                                    | System Software & Compiler Design | 19A05603a    | CO1   | Differentiate the various phases of a compiler.  |
|                                      |                                   |              | CO2   | Identify the tokens and verify the code.   |
|                                      |                                   |              | CO3   | Design code generator.   |
|                                      |                                   |              | CO4   | Apply code optimization techniques.  |
|                                      |                                   |              | CO5   | Design a compiler for a small programming language.  |
| 5                                    | Soft Skills                       | 19A052604a   | CO1   | Recognize the importance of verbal and non verbal skills.  |
|                                      |                                   |              | CO2   | Develop the interpersonal and intra personal skills.   |
|                                      |                                   |              | CO3   | Apply the knowledge in setting the SMART   |





|   |   |           |            |  |
|---|---|-----------|------------|--|
|   |   |           |            | goals and achieve the set goals.   |
|   |   |           | <b>CO4</b> | Analyze difficult situations and solve the problems in stress-free environment.  |
|   |   |           | <b>CO5</b> | Create trust among people and develop employability skills.  |
| 6 | Managerial Economics & Financial Analysis | 19A52602b | <b>CO1</b> | Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets.  |
|   |   |           | <b>CO2</b> | Apply concepts of production , cost and revenues for effective business decisions.   |
|   |   |           | <b>CO3</b> | Students can analyze how to invest their capital and maximize returns.   |
|   |   |           | <b>CO4</b> | Evaluate the capital budgeting techniques.   |
|   |   |           | <b>CO5</b> | Prepare the accounting statements and evaluate the financial performance of business entity.   |
| 7 | Big Data Analytics Laboratory             | 19A05602P | <b>CO1</b> | Configure Hadoop and perform File Management Tasks.  |
|   |   |           | <b>CO2</b> | Apply MapReduce programs to real time issues like word count, weather dataset and sales of a company.                                |
|   |   |           | <b>CO3</b> | Critically analyze huge data set using Hadoop distributed file systems and MapReduce.  |
|   |   |           | <b>CO4</b> | Apply different data processing tools like Pig, Hive and Spark.  |
| 8 | English Language Skills lab               | 19A52601P | <b>CO1</b> | Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills.                      |
|   |   |           | <b>CO2</b> | Apply communication skills through various language learning activities.   |
|   |   |           | <b>CO3</b> | Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension. |
|   |   |           | <b>CO4</b> | Evaluate and exhibit acceptable etiquette essential in social and professional settings.   |
|   |   |           | <b>CO5</b> | Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.                         |
| 9 | Research Methodology                      | 19A99601  | <b>CO1</b> | Understand basic concepts and its methodologies.   |
|   |   |           | <b>CO2</b> | Demonstrate the knowledge of research processes.   |
|   |   |           | <b>CO3</b> | Read, comprehend and explain research articles in their academic discipline.   |
|   |   |           | <b>CO4</b> | Analyze various types of testing tools used in research.   |
|   |   |           | <b>CO5</b> | Design a research paper without any ethical  |



|                             |  |              |   | issues.   |
|-----------------------------|--|--------------|---|---|
| COURSE OUTCOMES             |  |              | REGULATION: R19                               |   |
| YEAR/SEM: IV B.TECH - I SEM |  |              | BRANCH: CSE                                   |   |
| S.No                        | Subject Name                                     | Subject Code | Course Outcomes (CO): Student will be able to |   |
| 1                           | Internet of Things                               | 19A05701T    | CO1   | Choose the sensors and actuators for an IoT application.  |
|                             |  |              | CO2   | Select protocols for a specific IoT application.  |
|                             |  |              | CO3   | Utilize the cloud platform and APIs for IoT applications.   |
|                             |  |              | CO4   | Experiment with embedded boards for creating IoT prototypes.  |
|                             |  |              | CO5   | Design a solution for a given IoT application.  |
| 2                           | Software Testing                                 | 19A05702T    | CO1   | Choose Test cases that are geared to discover the program defects.  |
|                             |  |              | CO2   | Design test cases before writing code and run these tests automatically.  |
|                             |  |              | CO3   | Formulate test cases for testing different programming constructs.  |
|                             |  |              | CO4   | Test the applications using different testing methods and automation tools.                                     |
| 3                           | Cloud Computing                                  | 19A05703a    | CO1   | Outline the procedure for Cloud deployment.   |
|                             |  |              | CO2   | Distinguish different cloud service models and deployment models.   |
|                             |  |              | CO3   | Compare different cloud services.   |
|                             |  |              | CO4   | Design applications for an organization which use cloud environment.  |
| 4                           | Introduction to Micro Controllers & Applications | 19A04704a    | CO1   | Understand the importance of Microcontroller and Acquire the knowledge of Architecture of 8051 Microcontroller. |
|                             |  |              | CO2   | Apply and Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to using 8051 I/O ports.      |
|                             |  |              | CO3   | Develop the 8051 Assembly level programs using 8051 instruction set.  |
|                             |  |              | CO4   | Design the Interrupt system, operation of Timers/Counters and Serial port of 8051.                              |
| 5                           | Management Science                               | 19A52701b    | CO1   | Understand the concepts & principles of management and designs of organization in a practical world.            |
|                             |  |              | CO2   | Apply the knowledge of Work-study principles & Quality Control techniques in Industry.                          |
|                             |  |              | CO3   | Analyze the concepts of HRM in Recruitment, Selection and Training & Development.                               |
|                             |  |              | CO4   | Evaluate PERT/CPM Techniques for projects of  |



Sri Sri Sri Mookambika Educational Society's  
**VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE**  
 Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

|   |                        |           |            |   |
|---|------------------------|-----------|------------|---|
|   |                        |           |            | an enterprise and estimate time & cost of project & to analyze the business through SWOT. |
|   |                        |           | <b>CO5</b> | Create Modern technology in management science.   |
| 6 | Software Testing Lab   | 19A05702P | <b>CO1</b> | Demonstrate the basic testing procedures.   |
|   |                        |           | <b>CO2</b> | Formulate test cases and test suites.   |
|   |                        |           | <b>CO3</b> | Make use of the Selenium and Bugzilla tools to perform testing.                           |
|   |                        |           | <b>CO4</b> | Construct and test simple programs.   |
|   |                        |           | <b>CO5</b> | Demonstrate bug tracking.   |
| 7 | Internet of Things Lab | 19A05701P | <b>CO1</b> | Choose the sensors and actuators for an IoT application.                                  |
|   |                        |           | <b>CO2</b> | Select protocols for a specific IoT application.  |
|   |                        |           | <b>CO3</b> | Utilize the cloud platform and APIs for IoT application.                                  |
|   |                        |           | <b>CO4</b> | Experiment with embedded boards for creating IoT prototypes.                              |
|   |                        |           | <b>CO5</b> | Design a solution for a given IoT application.  |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

| COURSE OUTCOMES              |                     |              | REGULATION: R19                               |  |
|------------------------------|---------------------|--------------|---|--|
| YEAR/SEM: IV B.TECH - II SEM |                     |              | BRANCH: CSE                                   |  |
| S.No                         | Subject Name        | Subject Code | Course Outcomes (CO): Student will be able to |  |
| 1                            | DevOps              | 19A05801a    | CO1   | Explain how DevOps will balance the needs throughout the SDLC.                                       |
|                              |                     |              | CO2   | Demonstrate how DevOps improves the collaboration and productivity by automation.                    |
|                              |                     |              | CO3   | Adapt DevOps in real time projects.  |
|                              |                     |              | CO4   | Illustrate the continuous integration tools and monitoring tools.                                    |
| 2                            | Disaster Management | 19A01802a    | CO1   | Affirm the usefulness of integrating management principles in disaster mitigation work.              |
|                              |                     |              | CO2   | Distinguish between the different approaches needed to manage pre- during and post disaster periods. |
|                              |                     |              | CO3   | Explain the process of risk management.  |
|                              |                     |              | CO4   | Relate to risk transfer.   |



Sri Sri Sri Mookambika Educational Society's  
VAAGDEVI INSTITUTE OF TECHNOLOGY & SCIENCE  
Peddasettipalli (V), Proddatur-516360.



(Approved by A.I.C.T.E., New Delhi, Affiliated to JNTUA, Anantapuramu)

## Program Specific Outcomes (PSOs)

### List of Program Specific Outcomes for **Computer Science Engineering**

|      |   |
|------|---|
| PSO1 | Ability to understand the principles and development methodologies of computer systems so as to enable students to assess computer hardware and possess professional skills and knowledge of software design process. |
| PSO2 | Ability to apply mathematical solutions for computational task, model real world problems using appropriate data structure and suitable algorithm.  |
| PSO3 | Ability to use knowledge in varied domains to identify research gaps and hence to provide integrated solutions to new ideas and innovations.  |

### List of Program Specific Outcomes for **Electrical & Electronics Engineering**

|      |   |
|------|---|
| PSO1 | To mould students to become a professional with all necessary skills, personality and sound knowledge in basic and advance technological areas.   |
| PSO2 | To promote understanding of design and development associated with equipments for solving real time problems using modern hardware & software tools.  |
| PSO3 | Should have the Excellent capability and adaptability to analyze multi-disciplinary work in electrical and electronic systems/subsystems to develop good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities for a variety of engineering applications. |

### List of Program Specific Outcomes for **Electronics & Communication Engineering**

|      |   |
|------|---|
| PSO1 | <b>Solutions for Complex Problems:</b> Solve complex engineering problems by applying engineering knowledge in the field of Signal/Image processing and Communication.  |
| PSO2 | <b>Development of products:</b> Design system components and develop products that meet the specific needs of industry and society in Electronics and Communication Engineering   |
| PSO3 | <b>Interpersonal Skills:</b> Develop essential interpersonal skills and attitude needed for ethical leadership and teamwork such as effective listening and communication, presentation, team building and assertiveness. |