



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC301

**Course:** - Engineering Mathematics-III

**CO1:** Apply the concept of Laplace transform to solve the real integrals.

**CO2:** Find inverse Laplace transform of different functions using different properties & methods & learn to apply knowledge of Laplace & Inverse Transform to solve Initial Value Problems

**CO3:** Apply knowledge of Fourier series to expand periodic functions into infinite series.

**CO4:** Identify analytic functions & its use to find orthogonal trajectories and apply it to bilinear transformation & conformal mapping.

**CO5:** Apply Matrix algebra to solve the engineering problems.

**CO6:** Solve Partial differential equations by applying numerical solution and analytical methods for one dimensional heat and wave equations.

**Innovative Teaching - Exuberant Learning**

**Vision :** To be the most sought after academic, research and practice based department of Electronics and Computer Science Engineering that others would wish to emulate.



Department of Electronics & Computer Science  
SE Semester III

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

Course Code: - ECC302

Course: - Electronic Devices

CO1: To examine the working of semiconductor devices to understand its application in signal rectification.

CO2: To Interpret the characteristics of semiconductor devices to analyze line and load regulation.

CO3: To Analyze Electronics circuits using BJT and FET (DC & AC analysis) to examine its various configurations.

CO4: To compare various biasing circuits & configurations of BJT and MOSFETs to choose them for required application.

CO5: To design best circuit for the given specifications/application to improve performance parameters.

CO6: To illustrate the working of advanced nanoelectronic devices to understand its future use.



Department of Electronics & Computer Science  
SE Semester III

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

Course Code: - ECC303

Course: - Digital Electronics

CO1: Perform code conversion and able to apply Boolean algebra for the implementation and minimisation of logic functions.

CO2: Analyse, design and implement Combinational logic circuits and their application in designing arithmetic and logic functions.

CO3: Analyse, design and implement Sequential logic circuits and their applications in designing sequential circuits.

CO4: Design and implement various counter using flip flops and MSI chips.

CO5: Compare various TTL & CMOS logic families, PLDs, CPLD and FPGA

CO6: Describe basics of Verilog Hardware Description Language and its programming with combinational and sequential logic circuits and apply its knowledge for designing various digital circuits.



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC304

**Course:** - Data Structures and Algorithms

**CO1:** Describe and Compare the concept of data types, algorithms, Big O notation.

**CO2:** Compare basic data structures such as arrays, linked lists, stacks and queues.

**CO3:** Apply concept of singly link to solve real world problem.

**CO4:** Understand the concept of Trees and Graph

**CO5:** Solve problem involving graphs, trees

**CO6:** Select appropriate sorting and searching techniques for a given problem and use it.



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC305

**Course:** - Database Management Systems

**CO1:** Prioritize the necessity of database management system to modify based on the file system.

**CO2:** Design ER and EER diagram for real life applications like considering the problems that we are facing.

**CO3:** Develop relational model and write relational algebra queries.

**CO4:** Construct SQL queries for college database

**CO5:** Implement the concept of normalization to relational database design

**CO6:** Illustrate the concepts of transaction, concurrency and recovery



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL301

**Course:** - Electronic Devices Lab

**CO1:** Assess the working of semiconductor devices to be able to construct voltage regulator, clipper, lampers.

**CO2:** Interpret the characteristics of semiconductor devices to analyse the performance parameters.

**CO3:** Analyse electronics circuits using BJT and FET (DC & AC analysis) to design applications like amplifier.

**CO4:** Simulate and analyze basic circuits using electronic devices through software simulation



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL302

**Course:** - Digital Electronic Lab

**CO1:** Learn the functionality of basic logic gates.

**CO2:** Construct combinational circuits and verify their functionalities and their application in designing arithmetic and logic functions

**CO3:** Learn the functionality of flip flops and their conversion.

**CO4:** Design and implement synchronous and asynchronous counters, Shift registers using MSI and their applications in designing sequential circuits.

**CO5:** Simulate various combinational and sequential circuits and analyze the results using Verilog HDL.

**CO6:** Describe basics of Verilog Hardware Description Language and its programming with combinational and sequential logic circuits and apply its knowledge for designing various digital circuits.



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL303

**Course:** - Data Structures and Algorithms Lab

**CO1:** Implement various linear data structures.

**CO2:** Implement various nonlinear data structures.

**CO3:** Select appropriate sorting and searching techniques for a given problem and use it.

**CO4:** Develop solutions for real world problems by selecting appropriate data structure and algorithms.

**CO5:** Analyse the complexity of the given algorithms.





**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL304

**Course:** - Database Management Systems Lab

**CO1:** Design ER and EER diagram for real life applications like considering the problems that we are facing

**CO2:** Demonstrate DDL, DML, DCL and TCL commands

**CO3:** Formulate simple and complex queries for College database

**CO4:** Execute PL/SQL Constructs for real time application

**CO5:** Demonstrate the concept of concurrent transactions execution and frontend-backend connectivity.



**Department of Electronics & Computer Science  
SE Semester III**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL305      **Course:** - Skill Base Lab-OOPM: (C++ and Java)

**CO1:** Use C++ in programming.

**CO2:** Use different control structures.

**CO3:** Understand fundamental features of an object-oriented language: object classes and interfaces, exceptions and libraries of object collections.

**CO4:** Understand Java Programming.

**CO5:** To develop a program that efficiently implements the features and packaging concept of java in laboratory.

**CO6:** To implement Exception handling and Applets use Java.



Department of Electronics & Computer Science  
SE Semester IV

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

Course Code: - ECC401

Course: - Engineering Mathematics - IV

CO1: Apply the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various 'contour' integrals (L3)

CO2: Apply the concept of correlation and Regression to the engineering problems in data science, machine learning and AI (L3).

CO3: "Apply the concept of probability and expectation for getting the spread of the data and distribution of probabilities.(L3)"

CO4: Apply the concept of vector spaces and orthogonalization process in Engineering Problems (L3).

CO5: Apply Quadratic forms and Singular value decomposition in various Engineering applications.(L3)

CO6: Find the extremals of the functional using the concept of Calculus of variation (L3).



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC402

**Course:** - Electronic Circuits

**CO1:** Evaluate the performance of amplifiers through frequency response.

**CO2:** Analyse differential amplifiers for various performance parameters

**CO3:** Interpret mathematically the performance parameters in terms of circuit parameters

**CO4:** Analyze appropriate circuit for the given specifications/ applications

**CO5:** Explain various applications and circuits based on operational amplifiers.

**CO6:** Design an application with the use of integrated circuits for general purpose



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC403

**Course:** - Controls and Instrumentation

**CO1:** Derive the transfer functions for the given control systems using various methods L3

**CO2:** Analyse the performance of control systems based on the time domain and frequency domain specifications. L4

**CO3:** Predict the stability of the given control systems using appropriate stability criteria. L3

**CO4:** illustrate the working principle, selection criteria and applications of various transducers used in measurement systems. L2

**CO5:** illustrate various parameters of data acquisition systems. L2

**CO6:** interpret telemetry and instrument communication standards L1



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECC404      **Course:** - Microprocessors and Microcontrollers

**CO1:** Explain 16-bit Microprocessor architectures to learn the basics of internal hardware. L2

**CO2:** Explain fundamental concepts of Microcontrollers to learn the basics of internal hardware, L2 ,L3

**CO3:** develop programming skills for Microprocessors and apply it for writing various programs L2, L3

**CO4:** develop programming skills for Microcontrollers and apply it for writing various programsL2, L3

**CO5:** design and implement Microprocessor based systems to design computer based systems. L2, L3

**CO6:** design and implement Microcontroller based systems to design various embedded system. L2, L3



Department of Electronics & Computer Science  
SE Semester IV

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

**Course Code:** - ECC405 **Course:** - Discrete Structures and Automata Theory

**CO1:** Demonstrate the notion of mathematical thinking, mathematical proofs and to apply them in real world problem solving

**CO2:** Analyze and Reason logically different Relations and Functions using real world examples

**CO3:** Perform operations with Sets, Relations, Functions, Graphs and their real-time applications

**CO4:** Design Deterministic Finite Automata (DFA) and Non-deterministic Finite Automata (NFA) and Pushdown Automata with understanding of power and limitations

**CO5:** Design Context Free Grammar and perform the operations like simplification and normal forms

**CO6:** Apply Discrete Structures and Automata Theory concepts into solving real world computing problems in the domain of Formal Specification, Verification, Artificial Intelligence etc.



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL401

**Course:** - Electronic Circuits Lab

**CO1:** Experimentally evaluate performance of amplifiers through frequency response. for

**CO2:** Analyze differential amplifiers for various performance parameters

**CO3:** Implement practically various applications and circuits based on operational amplifiers

**CO4:** Implement practically various applications and circuits based on operational amplifiers.





**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL402

**Course:** Controls and Instrumentation Lab

**CO1:** Analyze frequency response of first and second -order electrical system via simulation L3

**CO2:** Validate the effect of damping factor on the response of second order system via simulation L2

**CO3:** Design PID controller and plot frequency response L3

**CO4:** Analyse the stability of control systems via simulations L3

**CO5:** Validate the characteristics of various temperature, pressure and level transducers L2

**CO6:** Develop the applications of Instrumentation systems L2



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL403      **Course:** Microprocessors and Microcontrollers Lab

**CO1:** To develop programming skills for Microprocessors and apply the knowledge in

assembly programs L2,L3

**CO2:** To develop programming skills for Microcontroller system and apply the knowledge in

assembly programming L2,L3

**CO3:** To interface various devices in microprocessor systems to design various mp based

systems. L2,L3

**CO4:** To interface various devices in Microcontroller systems to design various mc based

systems. L2L3



**Department of Electronics & Computer Science  
SE Semester IV**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECL404

**Course:** Skill-base Lab: Python programming

**CO1:** Describe syntax and semantics in Python using Jupyter Notebook

**CO2:** Illustrate different file handling operations in Python using Jupyter Notebook

**CO3:** Interpret object-oriented programming in Python

**CO4:** Design GUI Applications in Python

**CO5:** Express proficiency in the handling Python libraries for data science using VS Code

**CO6:** Develop machine learning applications using Python.



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC501**

**Course: Communication Engineering**

**CO1:** Analyse various analog modulation methods to compare them for their efficiency and bandwidth

**CO2:** Demonstrate various pulse modulation techniques.

**CO3:** Evaluate the impact of Inter Symbol Interference in Baseband transmission and methods to mitigate its effect.

**CO4:** Evaluate various Digital modulation methods based on spectral efficiency, Euclidean distance etc

**CO5:** "Analyse and present the characteristics of radio receivers to determine suitability of a receiver for given specifications".



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC502**

**Course: Computer Organization and Architecture**

**CO1:** state performance metrics of a computer

**CO2:** describe design considerations of processor, memory and I/O in computer systems

**CO3:** interpret objectives and functions of an operating system to describe for data processing in computer system

**CO4:** Analyze the concept of process management and evaluate performance of process scheduling algorithms for demonstration of file management management

**CO5:** Evaluate the advantages and limitations of parallelism in systems to improve efficiency and throughput

**CO6:** Summarize the various architectural advancements in modern processors.



Department of Electronics & Computer Science  
TE Semester V

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

Course Code: - ECC503

Course: Software Engineering

CO1: Apply software engineering concept and choose process models for a software project development.

CO2: Analyse and specify software requirement specification (SRS) for software system.

CO3: Execute requirement model into the design model and demonstrate the use of software and user-interface design principles.

CO4: create the project schedule and estimate the cost of software system.

CO5: Identify risks and prepare RMMM plan for quality software system.

CO6: Apply testing strategies and tactics for software system.



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC504**

**Course: Web Technology**

**CO1:** To design static web pages using HTML5.

**CO2:** To create the layout of web pages using CSS3.

**CO3:** to apply the concepts of client-side validation and scripts to static web pages using JavaScript and JQuery.

**CO4:** To design responsive web pages using front-end framework Bootstrap.

**CO5:** To design dynamic web pages using server -side scripting.

**CO6:** To develop a web application using appropriate web development framework.



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code:** - ECCDO501      **Course:** Software Testing and Quality Assurance

**CO1:** Investigate the reason for bugs and analyse the principles in software testing to prevent and remove bugs.

**CO2:** Recognize various software testing methods and strategies.

**CO3:** Develop test planning.

**CO4:** Experiment the test process for any software created by you/college

**CO5:** Demonstrate the software testing techniques in the commercial environment created by you

**CO6:** Interpret practical knowledge of a variety of ways to test software and quality attributes.





**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL501**

**Course: Communication Engineering Lab**

**CO1:** Perform hardware implementation of various analog and digital modulation methods to compare them for their efficiency and bandwidth

**CO2:** Demonstrate generation and detection of various pulse modulation techniques.

**CO3:** Apply techniques to insert Inter Symbol Interference and methods to mitigate its effect

**CO4:** Simulate various analog and digital modulation methods to compare them for their efficiency and bandwidth

**CO5:** Demonstrate multiplexing and de-multiplexing of signals using multiplexing techniques

**CO6:** Simulate the effect of sampling frequency on the reconstructed signal to avoid aliasing



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL502**

**Course:** Software Engineering and Web Technologies lab

**CO1:** Identify requirements and apply process model for selected case study.

**CO2:** Analyse and design models for the selected case study using UML modelling

**CO3:** solve experiment various Software Engineering and Project Management

Tools

**CO4** design static web pages using HTML5, CSS3

**CO5:** apply the concepts of Client-side validation and scripts to static web pages using JavaScript and JQuery

**CO6:** design dynamic web pages using Server-Side Scripting



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL503**

**Course:** Software Testing and Quality Assurance Lab

**CO1:** Elaborate the system thoroughly (for requirement, designing and implementation).

**CO2:** Trace the failures in the system.

**CO3:** Prioritize the reason for bugs.

**CO4:** Develop test plan and test cases.

**CO5:** Generate the test cases manually and using automated tools.

**CO6:** Illustrate the testing process.



**Department of Electronics & Computer Science  
TE Semester V**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL504**

**Course:** Professional Communication and Ethics - II

**CO1:** Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.

**CO2:** Strategize their personal and professional skills to build a professional image and meet the demands of the industry.

**CO3:** Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.

**CO4:** Deliver persuasive and professional presentations.

**CO5:** Develop creative thinking and interpersonal skills required for effective professional communication.

**CO6:** Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC601**

**Course:** Embedded Systems and RTOS

**CO1:** Describe various characteristic features and applications of Embedded systems.L2

**CO2:** Analyse and select hardware for Embedded system implementation.L2, L3

**CO3:** Evaluate various communication protocols for Embedded system implementation.L3

**CO4:** Compare GPOS and RTOS and investigate the concepts of RTOS.L2, L3

**CO5:** Evaluate and use various tools for testing and debugging embedded systems L2, L3

**CO6:** Design a system for different requirements based on life-cycle for the embedded system,

keeping oneself aware of ethics and environmental issues.L2, L3



Department of Electronics & Computer Science  
TE Semester VI

Programme Outcomes (PO)	
PO 1. Engineering Knowledge	PO 7. Environment and Sustainability
PO 2. Problem Analysis	PO 8. Ethics
PO 3. Design/Development of Solution	PO 9. Individual and Team Work
PO 4. Conduct Investigations of Complex Problems	PO 10. Communication
PO 5. Modern Tool Usage	PO 11. Project Management and Finance
PO 6. The Engineer and Society	PO 12. Life-long Learning

Program Specific Outcomes (PSOs)
PSO1: Design and implement cost effective hardware and software systems for real life applications.
PSO2: Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

Course Outcome

Course Code: - ECC602

Course: Artificial Intelligence

CO1: Identify the characteristics of the environment and differentiate between various agent architectures.

CO2: Apply the most suitable search strategy to design problem solving agents.

CO3: Implement a natural language description of statements in logic and apply the inference rules to design Knowledge Based agents.

CO4: Apply a probabilistic model for reasoning under uncertainty.

CO5: To understand various learning techniques.

CO6: To describe the various building blocks of an expert system for a given real world problem.



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC603**

**Course: Computer Networks**

**CO1:** Articulate the layers of OSI model and TCP/IP model and describe their functions.(L2)

**CO2:** Classify the characteristics of network devices and media used to design networks for computer communications(L1)

**CO3:** Demonstrate the knowledge of networking protocols at various layers of TCP/IP model.(L2)

**CO4:** Classify the routing protocols and analyse how to assign the IP addresses for a given network(L2)

**CO5:** Design and configure the networks using IP addressing and sub-netting / super-netting schemes(L3)

**CO6:** Explain the functions of Application layer and Presentation layers, their paradigms and protocols(L2).



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECC604**

**Course: Data Warehousing and Mining**

**CO1:** (B-2 UNDERSTAND) - Summarize Data Warehousing fundamentals and Dimensionality modeling principles

**CO2:** (B-2 UNDERSTAND) - Interpret the use of ETL techniques and Develop OLAP operations.

**CO3:** (B-3 APPLY ) - Utilize the importance of data pre-processing and basics of data mining techniques.

**CO4:** (B-1 REMEMBER) - Match the concepts of market basket analysis in real world applications.

**CO5:** (B-1 REMEMBER) - Make use of classification algorithms in real world dataset for classification and prediction.

**CO6:** (B-2 UNDERSTAND) - Demonstrate the concept of clustering and its applications.





**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECCDO601**

**Course: Machine Learning**

**CO1:** Comprehend basics of Machine Learning (L2)

**CO2:** Build Mathematical foundation for machine learning (L3)

**CO3:** Describe various Machine learning models (L2)

**CO4:** Select suitable Machine learning models for a given problem (L3)

**CO5:** Build Neural Network based models (L2)

**CO6:** Apply Dimensionality Reduction techniques (L3)



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL601**

**Course: Embedded Systems Lab**

**CO1:** Describe various characteristic features and applications of Embedded systems.L2

**CO2:** Analyse and select hardware for Embedded system implementation.L2, L3

**CO3:** Evaluate various communication protocols for Embedded system implementation.L3

**CO4:** Compare GPOS and RTOS and investigate the concepts of RTOS.L2, L3

**CO5:** Evaluate and use various tools for testing and debugging embedded systems L2, L3

**CO6:** Design a system for different requirements based on life-cycle for the embedded system,

keeping oneself aware of ethics and environmental issues.L2, L3



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL602**

**Course: Artificial Intelligence and Computer Networks Lab**

**CO1:** Identify suitable Agent Architecture for a given real world AI problem

**CO2:** Implement simple programs using Prolog.

**CO3:** Implement various search techniques for a Problem-Solving Agent.

**CO4:** Design and implement various network applications

**CO5:** Determine how to assign the IP addresses and configure a network

**CO6:** Configure the networks using IP addressing and subnetting / supernetting schemes using various OS commands



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL603**

**Course: Data Warehousing and Mining Lab**

**CO1:** (B-6:CREATE) - Construct data warehouse using dimensional modelling

**CO2:** (B-2:UNDERSTAND) - Demonstrate different OLAP operations

**CO3:** (B-4:ANALYZE) - Compare among different data mining techniques and decide the applicability for each

**CO4:** (B-4:ANALYZE) - Illustrate classifications, prediction, etc. on datasets using open source tools

**CO5:** (B-3:APPLY) - Experiment Market basket analysis in real world data using data mining tools

**CO6:** (B-6:CREATE) - Value and Formulate clustering techniques.



**Department of Electronics & Computer Science  
TE Semester VI**

<b>Programme Outcomes (PO)</b>	
<b>PO 1.</b> Engineering Knowledge	<b>PO 7.</b> Environment and Sustainability
<b>PO 2.</b> Problem Analysis	<b>PO 8.</b> Ethics
<b>PO 3.</b> Design/Development of Solution	<b>PO 9.</b> Individual and Team Work
<b>PO 4.</b> Conduct Investigations of Complex Problems	<b>PO 10.</b> Communication
<b>PO 5.</b> Modern Tool Usage	<b>PO 11.</b> Project Management and Finance
<b>PO 6.</b> The Engineer and Society	<b>PO 12.</b> Life-long Learning

<b>Program Specific Outcomes (PSOs)</b>
<b>PSO1:</b> Design and implement cost effective hardware and software systems for real life applications.
<b>PSO2:</b> Adapt to new generation technology in electronics & computer science domains with an innovative approach. Electronics & telecommunications engineering.

**Course Outcome**

**Course Code: - ECL603**

**Course: - Skill-based Laboratory**

**CO1:** Analyze concept of Open-source technology and basics of Linux operating system to be able to use Linux software.

**CO2:** "Execute various Linux Command Line administration tasks and perform file, user, group and process management tasks"

**CO3:** Execute various Linux Command Line utilities to perform storage and network management tasks

**CO4:** Implement Linux Server administration tasks and configure servers for front and backend services.

**CO5:** Analyse a given problem and apply requisite facets of SHELL programming in order to devise a SHELL script to solve the problem.

**CO6:** Apply security measures to protect the operating environment and explain virtualization and their role in elastic computing.