PERIYAR UNIVERSITY

PERIYAR PALKALAI NAGAR
SALEM - 636011

DEGREE OF BACHELOR OF SCIENCE

OUTCOME BASED EDUCATION

Syllabus for

B.SC. ELECTRONICS AND COMMUNICATION

(SEMESTER PATTERN)
(For Candidates admitted in the Colleges affiliated to
Periyar University from 2017 - 2018 onwards)

Programme Educational Objectives (PEOs):

Programme Educational Objectives (PEOs) are established through a consultation process. PEOs are broad statements that describe the career and professional accomplishments that the graduates can find opportunities in Sales, Marketing, Service and R&D Sectors.

The B.Sc. Degree programme graduates will…….

• **PEO 1** Practice the ethics of their profession consistent with a sense of social responsibility and develop their engineering design, problem –solving skills and aptitude for innovations as they work individually and in multi-disciplinary teams.

• **PEO 2** Communicate effectively and manage resources skill fully as members and leaders of the profession.

• **PEO 3** Be receptive to new technologies and attain professional competence through lifelong learning such as advanced degrees, professional registration, publications and other professional activities.

Programme Specific Outcomes:

On completion of the BSc Degree in Electronics and Communication, graduates will be able to

• **PSO1** Apply the fundamental concepts of electronics and communication to design a variety of components and systems for applications including.............. communication, networking, embedded systems, PCB, Mobile, TV and etc.

• **PSO2** Select and apply cutting-edge hardware and software tools to solve complex Electronics and Communication problems.

Programme Outcomes:

On completion of the B.Sc. degree the Electronics and Communication graduates will be able to

• **PO1** Utilize the basic knowledge in mathematics, science in Electronics and Communication areas.

• **PO2** Identify formulate and solve complex problems to achieve demonstrated conclusions using mathematical principles.

• **PO3** Design system components that meet the requirement of public safety and offer solutions.

• **PO4** Apply research-based knowledge to design and conduct experiments, analyze, synthesize and interpret the data pertaining to Electronics and arrive at valid conclusions.

• **PO5** Construct, choose and apply the techniques, resources and modern tools required for Electronics applications.

• **PO6** Examine the impact of Electronics solutions in global and environmental contexts and utilize the knowledge for sustained development.

• **PO7** Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics.

SEMESTER I

CORE I - SEMICONDUCTOR DEVICES

COURSE OBJECTIVES:

This course provides the important aspect of semiconductors and devices like diodes, Transistor, JFET and MOSFET.

Course Outcomes: After completion of this course, student able to	
CO1	Understand the band diagram, type of semiconductors and charge carrier life time.
CO2	Understand of capacitors and types of diodes breakdown
CO3	Demonstrate the transistor and their types
CO4	Understand the fundamentals for construction of different type of JFET.
CO5	To study the operating principles of MOSFET.

SEMESTR - I

SKILLED BASED ELECTIVE COURSE SBEC I -

APPLIED ELECTRIC CIRCUITS

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To understand and acquire knowledge about various circuit theorem.

- To make students strong in electric circuit designing.

- To learn the different laws and implement in circuits and also compare its gain.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the basic components in series and parallel connection.
CO2	Have a thorough understanding of the different circuit laws.
CO3	Understand various circuit theorems.
CO4	Analyse RMS & Power parameters of AC circuits.
CO5	Acquire the knowledge of RLC and its applications.

SEMESTER II

CORE II - APPLIED DIGITAL ELECTRONICS

COURSE OBJECTIVES:

- To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronic circuits.
- To prepare students to perform the analysis and design of various digital electronic circuits.
- To learn the design process of registers, counters and conversion of analog to digital conversion and vice-versa.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the structure of various number systems and its application in digital design.
CO2	Have a thorough understanding of the fundamental concepts and minimization techniques used in digital electronics.
CO3	Understand various combinational logic circuits and its applications
CO4	Analyse and design various sequential logic circuits and its applications.
CO5	Analyze the logic levels and apply them for the design of analog to digital conversion and vice versa.

SEMESTER II

POWER ELECTRONICS

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To understand and acquire knowledge about various power semiconductor devices.
- To provide the students a deep insight in to the working of different switching devices with respect to their characteristics.
- To study the principle of operation, design and synthesis of different types of power supplies and their applications.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of SCR, TRIAC, DIAC and UJT
CO2	Acquire knowledge about fundamental concepts and methods to turn ON and turn OFF the thyristor.
CO3	Understand the design principle of triggering circuit of SCR
CO4	Explain the switching principle and applications
CO5	Remember the working principle of various types of power supplies.

SEMESTER I & II

CORE PRACTICAL I - BASIC ELECTRONICS LAB

(ANY HARDWARE BASED SIMULATION TOOL MAY ALSO BE USED)

(Any 22 Experiments)

COURSE OBJECTIVES:

Basic electronics laboratory is the gateway of the electronics & communication engineering world. At the very beginning the students get familiarized with the various electronics instruments & components which basically equip them to construct complex circuits in near future. In this lab students build up preliminary electronic circuits and verify the results with theoretical concepts. Lab experiments are designed in such a fashion that the

COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of DIODES,BJT,THYRISTORS
CO2	To understand the basic theorems and to verify their operation
CO3	To understand the basic digital circuits and to verify their operation
CO4	Learn the basics of gates & Construct basic combinational circuits and verify their functionalities
CO5	Learn about Shift registers & counters

SEMESTER III

CORE III - ELECTRONIC CIRCUITS

COURSE OBJECTIVES:

To analyze and describe the applied electronics principles used to develop circuits and systems & To understand the fundamentals of the alternating current. To apply the basic tools and test equipment used to construct, troubleshoot, and design standard electronic circuits.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the basics of electrical energy and practical implementation of electrical fundamentals.
CO2	solve design problems on rectifiers, filters and power supply circuits.
CO3	Understand various types of amplifier.
CO4	Examine the basic components of feedback &its types.
CO5	Acquire the knowledge about oscillators, Multivibrators and Wave shaping circuits.

NON MAJOR ELECTIVE COURSE I

GROUP A- PAPER III - CELLULAR PHONES

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

To get knowledge about Cellular Radio, Elements of a Cellular Network, Cellular Telephony, Radio Propagation and its applications & the mobile servicing and Software Repairing.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the fundamental concepts of Cellular.
CO2	Understand the different accessing technology.
CO3	Understand the hardware & software of mobile
CO4	Understand the servicing of mobile
CO5	Understand the other mobile service tools

SEMESTER IV

CORE IV - 8085 MICROPROCESSOR & INTERFACING

COURSE OBJECTIVES:

To understand the features and applications of 8085 microprocessor & exploit the abilities for the design and peripheral interfacing with real time domains

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the evolution of processor and 8085 architecture.
CO2	Learn the instruction and to create the ALP.
CO3	Investigate the instruction format and machine cycle fetch.
CO4	Compute and design for time delay and counters.
CO5	Design and development of interfacing and applications.

SEMESTER III & IV

CORE PRACTICAL II - ELECTRONIC CIRCUITS LAB

(ANY HARDWARE BASED SIMULATION TOOL MAY ALSO BE USED)

Course Objectives

The objective of the course is to equip the students with in-depth basic concepts and understanding of the principles of operation, construction, and characteristics of basic electronic equipment, and their utilization in basic electronics building blocks (or modules) and their performances practically. The techniques of analysis and design of basic building blocks of modern technology using device would be emphasized.

COURSE OUTCOMES: After completion of this course, student able to

CO1	To develop hands-on skills and knowledge about the electronic devices such as oscilloscopes, function generators, multimeter, etc.
CO2	To implement different types of electronic circuits using the techniques, skills.
CO3	To analyze complex networks of resistors, inductors, capacitors subject to both direct (non-time-varying) and alternating voltages and currents.

SEMESTER III & IV

CORE PRACTICAL III

(ANY EMBEDDED BASED SIMULATION TOOL MAY ALSO BE USED)

8085 MICROPROCESSOR & INTERFACINGLAB

To expose students to the operation of typical microprocessor (8085) **simulation tool/** trainer kit. solve different problems by developing different programs & to develop the quality of assessing and analyzing the obtained data.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Identify relevant information to supplement to the Microprocessor.
CO2	Set up programming strategies and select proper mnemonics and run their program on the training boards/simulator.
CO3	**Practice** different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations in comparison.
CO4	Develop testing and experimental procedures on Microprocessor **analyze** their operation under different cases.
CO5	**Prepare** professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.

SEMESTER IV

NON MAJOR ELECTIVE COURSEIIGROUP B- PAPER I

BASIC ELECTRONICS – II

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

To acquire the basic knowledge of digital logic levels and Electronic instruments.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the structure of various number systems and its application in digital design.
CO2	Have a thorough understanding of the fundamental concepts and minimization techniques used in digital electronics.
CO3	Understand various combinational logic circuits and its applications

CO4	Analyse and design the power supply's
CO5	Analyze the various electronic instruments.

SEMESTER V

CORE V - ELECTRONIC COMMUNICATION SYSTEMS

COURSE OBJECTIVES:

Learn about theoretical bounds on the rates of Electronic Communication System and represent a digital signal using several modulation methods. Draw signal space diagrams compute spectra of modulated signals and apply redundancy for reliable communication.

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

CO1	Understand the basics of EM, space diagram, spectrum, propagation.
CO2	Learn the generation and detection of Modulation and base band system.
CO3	Understand the generation, detection, Transmitter of FM.
CO4	Learn the AM & FM Receiver
CO5	Evaluate the performance of PCM, DPCM and DM in a digital communication system

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER V

CORE VI - IC's AND THEIR APPLICATIONS

COURSE OBJECTIVES:

This course elaborates the production methods of IC's and various application of them including logic, OP- AMPs.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the method of IC's fabrication Techniques.
CO2	Study the various circuits of Logic operations using ICs.
CO3	Get the knowledge of various OP-Amp circuits
CO4	Study the principle of Filter.
CO5	Study the principle of Timer& Phase locked loop circuits.

SEMESTER V

ELECTIVE I - PAPER I-Group A

8051 MICROCONTROLLER AND INTERFACING

COURSE OBJECTIVES:

To understand the basics of micro controller architecture and memory systems. learn the assembly language programming instructions and writing programs & to exploit the abilities for the design and peripheral interfacing with real time domains.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the evolution of microcontroller8051 architectures, pin functions and bus timing.
CO2	Learn the instruction format, and to create the assembly language program with looping techniques.
CO3	Investigate the interfacing techniques for keyboard and optical devices.
CO4	Compute and design for converter and real time applications.
CO5	Design and development of memories.

CO4	Understand the basic idea about Memories and its applications.

SEMESTER V

ELECTIVE II - PAPER III Group B

SATELLITE, CABLE AND DTH SYSTEMS

COURSE OBJECTIVES:

- To introduce the basics concepts of Satellites and cable networks.
- To make the students assemble and troubleshoot DTH there self.
- Creates entrepreneurship opportunity.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge about history and basics of satellites
CO2	Acquire knowledge about cable TV network transmission techniques
CO3	Acquire knowledge about digital satellite TV network transmission techniques
CO4	Introduction of DTH Components
CO5	Installing the DTH & supporting peripherals

SEMESTER V

SKILLED BASED ELECTIVE COURSE SBEC III -

ELECTRONIC INSTRUMENTATION(IN DEPTH THEORY &

ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To introduce the fundamental electronic instrumentation things.
- To expose the students to upgrade their knowledge in industry side.
- To get familiarize with recent instrumentation technologies.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge in the fundamental principle of electromechanical instruments.
CO2	Become familiar with Bridges Network circuits
CO3	Acquire the knowledge in different types of oscilloscopes.
CO4	Understand the signal generation techniques.
CO5	Understand the working function and application of transducer.

SEMESTER V

SKILLED BASED ELECTIVE COURSESBEC IV -

COMPETETIVE SKILLS

(SIMPLE THEORY ONLY)

50 Multiple Choice Questions. EACH QUESTION 1.5 MARKS.TEN

Multiple Choice Questions From Each Unit

COURSE OBJECTIVES:

To provide students with solid foundation in CSE so that they are able to use this knowledge in getting jobs and maintaining their jobs. To develop students with professional and ethical attitude, effective communication skills and the attitude of working in group/with people for successful careers.

COURSE OUTCOMES: After completion of this course, student able to

CO1	The ability to analyze a problem and to identify the appropriate Verbal reasoning.
CO2	The ability to apply nonverbal reasoning.
CO3	An understanding of professional, ethical and social responsibilities.

CO4	The ability to communicate effectively with a range of audiences.ᴿ UNIVERSITY
CO5	The ability to succeed in competitive exams

SEMESTER VI

CORE VII - PC HARDWARE NETWORKING & TROUBLESHOOTING

COURSE OBJECTIVES:

This course guides the complete view of hardware of the personal computer and possible troubleshooting.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the motherboard types and connection with various types of RAM
CO2	Study the various versions of BIOS and their functions.
CO3	Get the knowledge of Keyboard and Mouse connections and their troubleshooting
CO4	Understand the basic of Hard disk and their connections, with CD and DVD storage devices & the printer types
CO5	Study the networking and their connections with assembling of PC in the cabinet.

SEMESTER VI

CORE VIII - NETWORK COMMUNICATION & SECURITY

COURSE OBJECTIVES:

- Describe various communications networks and their main component
- Identify the advantages and disadvantages of a network.
- Identify the function of a firewall, and how it keeps a computer secure and safe from viruses. Prepare a plan for anti-virus protection.

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

CO1	Identify the components associated with Transmission methods PERIYAR UNIVERSITY
CO2	Students will details of s network architecture, Topology technology etc
CO3	Understand networks protocols and network management .
CO4	The concept of encapsulation and its relationship to layering in the network model.
CO5	An ability to understand and analyze the issues in providing Quality-Of-Service for network multimedia applications such as Internet, telephony& network security

SEMESTER VI

CORE IX - BIOMEDICAL INSTRUMENTS

(Simple Theory Only) OR PROJECT WORK

COURSE OBJECTIVES:

To introduce an fundamentals of Human Physiology and explore the human body parameter measurements setups

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

CO1	Understand the human physiology of biomedical system
CO2	Measure biomedical and physiological information
CO3	Discuss the application of Electronics in diagnostics and therapeutic area.
CO4	Make the students understand the concepts Pulse Oximeter and pace maker techniques
CO5	Give basic ideas about modern medical imaging application

SEMESTER VI

ELECTIVE III - PAPER III - GROUP CELECTRONIC

DEFENSE SYSTEMS

COURSE OBJECTIVES: Students will try to learn:

Understand the concept of electronic warfare. and acquainted with the basic characteristics and requirements of electronic warfare receivers,the basic principles of electronic countermeasures ,its types and classes of ECM and the parameters of radars, and radar systems pertaining to ECM,

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

CO1	Gain knowledge in the fundamental principle of Electronic defense system,weapon systems
CO2	Analyse the functioning and interrelations of subsytems in an electronic warfare system
CO3	Develop technical architecture of electronic intercept systems in preliminary system design level
CO4	Develop basic simulation and analysis tools for the assesment of a given ECM.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER VI

SKILLED BASED ELECTIVE COURSE

SBEC V - AUDIO & VIDEO SYSTEMS (SIMPLE THEORY ONLY)

COURSE OBJECTIVES:

- To introduce the fundamental electronic audio & video concepts.

- To expose the students to upgrade their knowledge in audio & amplifiers.

- To get exposure and trigger for entrepreneurship.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge in the fundamental principle of microphone & loudspeakers

CO2	Acquire the knowledge in different types of audio amplifiers and functioning
CO3	Understand the stereo sound technology
CO4	Get exposure on audio components servicing
CO5	Helpful for knowing colour TV basic concepts & troubleshooting.

SEMESTER VI

SKILLED BASED ELECTIVE COURSE

SBEC VI - LIFE DEVELOPMENT SKILLS

COURSE OBJECTIVES:

This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underly personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers. Prerequisite

COURSE OUTCOMES: After completion of this course, student able to

CO1	Define and Identify different life skills required in personal and professional life
CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
CO3	Develop an Preparing for a Job Interview
CO4	Understand the basics of teamwork and leadership
CO5	the basic mechanics of effective communication .

SEMESTER V & VI

CORE PRACTICAL IV

IC'S & COMMUNICATION LAB

COURSE OBJECTIVES:

The main aim of this lab is to teach the linear and non-linear applications of operational amplifiers (741). Students are made familiar with theory and applications of 555 timers. Students are made to Design combinational logic circuits using digital ICs & To acquire the basic knowledge of special function ICs

CO1	Design and analyse the various digital circuits.
CO2	Design and analyse the various linear & nonlinear application of op-amp.
CO3	Design and analyse oscillators and multivibrator circuits using op-amp & Timers.
CO4	Design and analyse the various communication application of op-amp.
CO5	Practice the basic mechanics of convertions.

SEMESTER V & VI

CORE PRACTICAL V- Group D

8051 MICROCONTROLLER & INTERFACING LAB

Course Objectives

   To expose students to the operation of typical Microcontroller (8051) **simulation tool/** trainer kit. solve different problems by developing different programs & to develop the quality of assessing and analyzing the obtained data.

COURSE OUTCOMES: After completion of this course, student able to

CO1	**Identify** relevant information to supplement to the Microcontroller (8051).
CO2	Set up programming strategies and select proper mnemonics and run their program onthe training boards.
CO3	**Practice** different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy 2experimental observations in comparison.
CO4	Develop testing and experimental procedures on Microcontroller (8051) **analyze** theiroperation under different cases.
CO5	**Prepare** professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.

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• **PEO 2** Communicate effectively and manage resources skill fully as members and leaders of the profession.

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• **PSO1** Apply the fundamental concepts of electronics and communication to design a variety of components and systems for applications including.............. communication, networking, embedded systems, PCB, Mobile, TV and etc.

• **PSO2** Select and apply cutting-edge hardware and software tools to solve complex Electronics and Communication problems.

Programme Outcomes:

On completion of the B.Sc. degree the Electronics and Communication graduates will be able to

• **PO1** Utilize the basic knowledge in mathematics, science in Electronics and Communication areas.

• **PO2** Identify formulate and solve complex problems to achieve demonstrated conclusions using mathematical principles.

• **PO3** Design system components that meet the requirement of public safety and offer solutions.

• **PO4** Apply research-based knowledge to design and conduct experiments, analyze, synthesize and interpret the data pertaining to Electronics and arrive at valid conclusions.

• **PO5** Construct, choose and apply the techniques, resources and modern tools required for Electronics applications.

• **PO6** Examine the impact of Electronics solutions in global and environmental contexts and utilize the knowledge for sustained development.

• **PO7** Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics.

SEMESTER I

CORE I - SEMICONDUCTOR DEVICES

COURSE OBJECTIVES:

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Course Outcomes: After completion of this course, student able to	
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CO4	Understand the fundamentals for construction of different type of JFET.
CO5	To study the operating principles of MOSFET.

SEMESTR - I

SKILLED BASED ELECTIVE COURSE

SBEC I - APPLIED ELECTRIC CIRCUITS

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To understand and acquire knowledge about various circuit theorem.

- To make students strong in electric circuit designing.

- To learn the different laws and implement in circuits and also compare its gain.

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CO1	Examine the basic components in series and parallel connection.
CO2	Have a thorough understanding of the different circuit laws.
CO3	Understand various circuit theorems.
CO4	Analyse RMS & Power parameters of AC circuits.
CO5	Acquire the knowledge of RLC and its applications.

SEMESTER II

CORE II - APPLIED DIGITAL ELECTRONICS

COURSE OBJECTIVES:

- To acquire the basic knowledge of digital logic levels and application of knowledge tounderstand digital electronic circuits.
- To prepare students to perform the analysis and design of various digital electronic circuits.
- To learn the design process of registers, counters and conversion of analog to digital conversionand vice-versa.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the structure of various number systems and its application in digital design.
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CO3	Understand various combinational logic circuits and its applications
CO4	Analyse and design various sequential logic circuits and its applications.
CO5	Analyze the logic levels and apply them for the design of analog to digital conversion and vice versa.

SEMESTER II

SKILLED BASED ELECTIVE COURSE

SBEC II - POWER

ELECTRONICS

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To understand and acquire knowledge about various power semiconductor devices.
- To provide the students a deep insight in to the working of different switching devices withrespect to their characteristics.
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COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of SCR, TRIAC, DIAC and UJT
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CO3	Understand the design principle of triggering circuit of SCR
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SEMESTER I & II

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(ANY HARDWARE BASED SIMULATION TOOL MAY ALSO BE USED)

(Any 22 Experiments)

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COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of DIODES,BJT,THYRISTORS
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CO3	To understand the basic digital circuits and to verify their operation
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CO5	Learn about Shift registers & counters

SEMESTER III

CORE III - ELECTRONIC CIRCUITS

COURSE OBJECTIVES:

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CO5	Acquire the knowledge about oscillators, Multivibrators and Wave shaping circuits.

SEMESTER III

NON MAJOR ELECTIVE

COURSE I GROUP A- PAPER III -

CELLULAR PHONES

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

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CO3	Understand the hardware & software of mobile
CO4	Understand the servicing of mobile
CO5	Understand the other mobile service tools

SEMESTER IV

CORE IV - 8085 MICROPROCESSOR & INTERFACING

COURSE OBJECTIVES:

To understand the features and applications of 8085 microprocessor & exploitthe abilities for the design and peripheral interfacing with real time domains

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SEMESTER III & IV

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The objective of the course is to equip the students with in-depth basic concepts and understanding of the principles of operation, construction, and characteristics of basic electronic equipment, and their utilization in basic electronics building blocks (or modules) and their performances practically. The techniques of analysis and design of basic building blocks of modern technology using device would be emphasized.

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SEMESTER III & IV

CORE PRACTICAL III

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CO5	**Prepare** professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.

SEMESTER IV

NON MAJOR ELECTIVE COURSEII

GROUP B- PAPER I

BASIC ELECTRONICS – II

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

To acquire the basic knowledge of digital logic levels and Electronic instruments.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the structure of various number systems and its application in digital design.
CO2	Have a thorough understanding of the fundamental concepts and minimization techniques used in digital electronics.
CO3	Understand various combinational logic circuits and its applications
CO4	Analyse and design the power supply's
CO5	Analyze the various electronic instruments.

SEMESTER V

CORE V - ELECTRONIC COMMUNICATION SYSTEMS

COURSE OBJECTIVES:

Learn about theoretical bounds on the rates of Electronic Communication System and represent a digital signal using several modulation methods. Draw signal space diagrams compute spectra of modulated signals and apply redundancy for reliable communication.

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

CO1	Understand the basics of EM, space diagram, spectrum, propagation.
CO2	Learn the generation and detection of Modulation and base band system.
CO3	Understand the generation, detection, Transmitter of FM.
CO4	Learn the AM & FM Receiver
CO5	Evaluate the performance of PCM, DPCM and DM in a digital communication system

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTER V

CORE VI - IC's AND THEIR APPLICATIONS

COURSE OBJECTIVES:

This course elaborates the production methods of IC's and various applicationof them including logic, OP- AMPs**.**

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the method of IC's fabrication Techniques.
CO2	Study the various circuits of Logic operations using ICs.
CO3	Get the knowledge of various OP-Amp circuits
CO4	Study the principle of Filter.
CO5	Study the principle of Timer& Phase locked loop circuits.

SEMESTER V

ELECTIVE I - PAPER I-Group A

8051 MICROCONTROLLER AND INTERFACING

COURSE OBJECTIVES:

To understand the basics of micro controller architecture and memory systems. learn the assembly language programming instructions and writing programs & to exploit the abilities for the design and peripheral interfacing with real time domains.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the evolution of microcontroller8051 architectures, pin functions and bus timing.
CO2	Learn the instruction format, and to create the assembly language program with looping techniques.
CO3	Investigate the interfacing techniques for keyboard and optical devices.
CO4	Compute and design for converter and real time applications.
CO5	Design and development of memories.

SEMESTER V

ELECTIVE II - PAPER III Group B

SATELLITE, CABLE AND DTH SYSTEMS

COURSE OBJECTIVES:

- To introduce the basics concepts of Satellites and cable networks.
- To make the students assemble and troubleshoot DTH there self.
- Creates entrepreneurship opportunity.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge about history and basics of satellites
CO2	Acquire knowledge about cable TV network transmission techniques
CO3	Acquire knowledge about digital satellite TV network transmission techniques
CO4	Introduction of DTH Components
CO5	Installing the DTH & supporting peripherals

SEMESTER V

SKILLED BASED ELECTIVE COURSE

SBEC III - ELECTRONIC INSTRUMENTATION

(IN DEPTH THEORY & ANALYSIS NOT REQUIRED)

COURSE OBJECTIVES:

- To introduce the fundamental electronic instrumentation things.
- To expose the students to upgrade their knowledge in industry side.
- To get familiarize with recent instrumentation technologies.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge in the fundamental principle of electromechanical instruments.
CO2	Become familiar with Bridges Network circuits
CO3	Acquire the knowledge in different types of oscilloscopes.
CO4	Understand the signal generation techniques.
CO5	Understand the working function and application of transducer.

SEMESTER V

SKILLED BASED ELECTIVE

COURSESBEC IV - COMPETETIVE

SKILLS

(SIMPLE THEORY ONLY)

50 Multiple Choice Questions. EACH QUESTION 1.5

MARKS.TEN Multiple Choice Questions From Each

Unit

COURSE OBJECTIVES:

To provide students with solid foundation in CSE so that they are able to use this knowledge in getting jobs and maintaining their jobs. To develop students with professional and ethical attitude, effective communication skills and the attitude of working in group/with people for successful careers.

COURSE OUTCOMES: After completion of this course, student able to

CO1	The ability to analyze a problem and to identify the appropriate Verbal reasoning.
CO2	The ability to apply nonverbal reasoning.
CO3	An understanding of professional, ethical and social responsibilities.
CO4	The ability to communicate effectively with a range of audiences.
CO5	The ability to succeed in competitive exams

SEMESTER VI

CORE VII - PC HARDWARE NETWORKING &TROUBLESHOOTING

COURSE OBJECTIVES:

This course guides the complete view of hardware of the personal computer and possibletroubleshooting.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Understand the motherboard types and connection with various types of RAM
CO2	Study the various versions of BIOS and their functions.
CO3	Get the knowledge of Keyboard and Mouse connections and their troubleshooting
CO4	Understand the basic of Hard disk and their connections, with CD and DVD storage devices & the printer types
CO5	Study the networking and their connections with assembling of PC in the cabinet.

SEMESTER VI

CORE VIII - NETWORK COMMUNICATION & SECURITY

COURSE OBJECTIVES:

- Describe various communications networks and their main component
- Identify the advantages and disadvantages of a network.
- Identify the function of a firewall, and how it keeps a computer secure and safe fromviruses. Prepare a plan for anti-virus protection.

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

CO1	Identify the components associated with Transmission methods.
CO2	Students will details of s network architecture, Topology technology etc
CO3	Understand networks protocols and network management .
CO4	The concept of encapsulation and its relationship to layering in the network model.

CO5	An ability to understand and analyze the issues in providing Quality-Of-Service for network multimedia applications such as Internet, telephony& network security

SEMESTER VI

CORE - BIOMEDICAL INSTRUMENTS

(Simple Theory Only) OR PROJECT WORK

COURSE OBJECTIVES:

To introduce an fundamentals of Human Physiology and explore the human bodyparameter measurements setups

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

CO1	Understand the human physiology of biomedical system
CO2	Measure biomedical and physiological information
CO3	Discuss the application of Electronics in diagnostics and therapeutic area.
CO4	Make the students understand the concepts Pulse Oximeter and pace maker techniques
CO5	Give basic ideas about modern medical imaging application

SEMESTER VI

ELECTIVE III - PAPER III - GROUP C

ELECTRONIC DEFENSE SYSTEMS

(SIMPLE THEORY ONLY)

COURSE OBJECTIVES: Students will try to learn:

Understand the concept of electronic warfare, and acquainted with

the basic characteristics and requirements of electronic warfare receivers,the basic principles of electronic countermeasures ,its types and classes of ECM and the parameters of radars,and radar systems pertaining to ECM,

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

CO1	Gain knowledge in the fundamental principle of Electronic defense system,weapon systems
CO2	Analyse the functioning and interrelations of subsytems in an electronic warfare system
CO3	Develope technical architecture of electronic intercept systems in preliminary system design level
CO4	Develope basic simulation and analysis tools for the assesment of a given ECM.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTER VI

SKILLED BASED ELECTIVE COURSE

SBEC V - AUDIO & VIDEO SYSTEMS (SIMPLE THEORY ONLY)

COURSE OBJECTIVES:

- To introduce the fundamental electronic audio & video concepts.

- To expose the students to upgrade their knowledge in audio & amplifiers.

- To get exposure and trigger for entrepreneurship.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Gain knowledge in the fundamental principle of microphone & loudspeakers
CO2	Acquire the knowledge in different types of audio amplifiers and functioning
CO3	Understand the stereo sound technology
CO4	Get exposure on audio components servicing

CO5	Helpful for knowing colour TV basic concepts & troubleshooting.

SEMESTER VI

SKILLED BASED ELECTIVE

COURSE SBEC VI - LIFE

DEVELOPMENT SKILLS

COURSE OBJECTIVES:

This course is designed to enhance the employability and maximize the potential of
the students by introducing them to the principles that underly personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers. Prerequisite

COURSE OUTCOMES: After completion of this course, student able to

CO1	Define and Identify different life skills required in personal and professional life
CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
CO3	Develop an Preparing for a Job Interview
CO4	Understand the basics of teamwork and leadership
CO5	the basic mechanics of effective communication .

SEMESTER V & VI

CORE PRACTICAL IV

IC'S & COMMUNICATION LAB

(ANY HARDWARE BASED SIMULATION TOOL MAY ALSO BE USED)

(Any 22 Experiments)

COURSE OBJECTIVES:

The main aim of this lab is to teach the linear and non-linear applications of

operational amplifiers (741). Students are made familiar with theory and applications of 555 timers. Students are made to Design combinational logic circuits using digital ICs & To acquire the basic knowledge of special function ICs

COURSE OUTCOMES:

CO1	Design and analyse the various digital circuits.
CO2	Design and analyse the various linear & nonlinear application of op-amp.
CO3	Design and analyse oscillators and multivibrator circuits using op-amp & Timers.
CO4	Design and analyse the various communication application of op-amp.
CO5	Practice the basic mechanics of convertions.

SEMESTER V & VI

CORE PRACTICAL V- Group D

8051 MICROCONTROLLER & INTERFACING LAB

(ANY EMBEDDED BASED SIMULATION TOOL MAY ALSO BE USED

Course Objectives

To expose students to the operation of typical Microcontroller (8051) **simulation tool/** trainer kit. solve different problems by developing different programs & to develop the quality of assessing and analyzing the obtained data.

COURSE OUTCOMES: After completion of this course, student able to

CO1	**Identify** relevant information to supplement to the Microcontroller (8051).
CO2	Set up programming strategies and select proper mnemonics and run their program on the training boards.
CO3	**Practice** different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy 2experimental observations in comparison.

CO4	Develop testing and experimental procedures on Microcontroller (8051) **analyze** their operation under different cases.
CO5	**Prepare** professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.

PERIYAR UNIVERSITY

PERIYAR PALKALAI NAGARSALEM – 636011

DEGREE OF BACHELOR OF SCIENCE

CHOICE BASED CREDIT SYSTEM

Syllabus for

B.SC. ELECTRONICS AND COMMUNICATION

(SEMESTER PATTERN)

(For Candidates admitted in the Colleges affiliated to

Periyar University from 2023 – 2024 onwards)

Programme Educational Objectives (PEOs):

Programme Educational Objectives (PEOs) are established through a consultation process. PEOs are broad statements that describe the career and professional accomplishments that the graduates can find opportunities in Sales, Marketing, Service and R&D Sectors.

The B.Sc. Degree programme graduates will

• **PEO 1** Practice the ethics of their profession consistent with a sense of social responsibility and develop their engineering design, problem -solving skills and aptitude for innovations as they work individually and in multi-disciplinary teams.

• **PEO 2** Communicate effectively and manage resources skill fully as members and leaders of the profession.

• **PEO 3** Be receptive to new technologies and attain professional competence through lifelong learning such as advanced degrees, professional registration, publications and other professional activities.

Programme Specific Outcomes:

On completion of the BSc Degree in Electronics and Communication, graduates will be able to

• **PSO1** Apply the fundamental concepts of electronics and communication to design a variety of components and systems for applications including Communication, Networking, Embedded systems, PCB, Mobile, TV and etc.

• **PSO2** Select and apply cutting-edge hardware and software tools to solve complex Electronics and Communication problems.

Programme Out comes:

On completion of the B.Sc. degree the Electronics and Communication graduates will be able to

• **PO1** Utilize the basic knowledge in Mathematics, science in Electronics and Communication areas,Computer and etc.

• **PO2** Identify formulate and solve complex problems to achieve demonstrated conclusionsusing Mathematical principles.

• **PO3** Design system components that meet the requirement of public safety and offersolutions.

• **PO4** Apply research-based knowledge to design and conduct experiments, analyze,synthesize and interpret the data pertaining to Electronics and arrive at valid conclusions.

• **PO5** Construct, choose and apply the techniques, resources and modern tools required for Electronics applications.

• **PO6** Examine the impact of Electronics solutions in global and environmental contexts andutilize the knowledge for sustained development.

• **PO7** Develop consciousness of professional, ethical and social responsibilities as experts inthe field of Electronics.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER I

CORE I - SEMICONDUCTOR DEVICES

COURSE OBJECTIVES:

This course provides the important aspect of semiconductors and devices like diodes, Transistor, JFET and MOSFET.

Course Outcomes: After completion of this course, student able to	
CO1	Understand the band diagram, type of semiconductors and charge carrier life time.
CO2	Understand of capacitors and types of diodes breakdown
CO3	Demonstrate the transistor and their types
CO4	Understand the fundamentals for construction of different type of JFET.
CO5	To study the operating principles of MOSFET.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTR - I

SKILL ENHANCEMENT

(Foundation Course)

APPLIED ELECTRIC

CIRCUITS

COURSE OBJECTIVES:

● To understand and acquire knowledge about various circuit theorem.

● To make students strong in electric circuit designing.

● To learn the different laws and implement in circuits and also compare its gain.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the basic components in series and parallel connection.
CO2	Have a thorough understanding of the different circuit laws.
CO3	Understand various circuit theorems.
CO4	Analyse RMS & Power parameters of AC circuits.
CO5	Acquire the knowledge of RLC and its applications.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER II

CORE II - APPLIED DIGITAL ELECTRONICS

COURSE OBJECTIVES:

● To acquire the basic knowledge of digital logic levels and application of

knowledge tounderstand digital electronic circuits.

- To prepare students to perform the analysis and design of various digital electroniccircuits.
- To learn the design process of registers, counters and conversion of analog to digitalconversion and vice-versa.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Examine the structure of various number systems and its application in digital design.
CO2	Have a thorough understanding of the fundamental concepts and minimization techniques used in digital electronics.
CO3	Understand various combinational logic circuits and its applications
CO4	Analyse and design various sequential logic circuits and its applications.
CO5	Analyze the logic levels and apply them for the design of analog to digital conversion and vice versa.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER II

SKILL ENHANCEMENT COURSE

SEC-2 POWER ELECTRONICS

COURSE BJECTIVES:

- To understand and acquire knowledge about various power semiconductor devices.
- To provide the students a deep insight in to the working of different switching deviceswith respect to their characteristics.
- To study the principle of operation, design and synthesis of different types of powersupplies and their applications.

COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of SCR, TRIAC, DIAC and UJT
CO2	Acquire knowledge about fundamental concepts and methods to turn ON and turn OFF the thyristor.
CO3	Understand the design principle of triggering circuit of SCR
CO4	Explain the switching principle and applications
CO5	Remember the working principle of various types of power supplies.

B.SC. ELECTRONICS AND COMMUNICATION

SEMESTER I & II

CORE PRACTICAL I - BASIC ELECTRONICS LAB

(ANY HARDWARE BASED SIMULATION TOOL MAY ALSO BE USED)

(Any 22 Experiments)

COURSE OBJECTIVES:

Basic electronics laboratory is the gateway of the electronics & communication engineering world. At the very beginning the students get familiarized with the various electronics instruments & components which basically equip them to construct complex circuits in near future. In this lab students build up preliminary electronic circuits and verify the results with theoretical concepts. Lab experiments are designed in such a fashion that the engineering skill of the students starts to enrich**.**

COURSE OUTCOMES: After completion of this course, student able to

CO1	Ability to express characteristics of DIODES, BJT, THYRISTORS
CO2	To understand the basic theorems and to verify their operation
CO3	To understand the basic digital circuits and to verify their operation

CO4	Learn the basics of gates & construct basic combinational circuits and verify their functionalities
CO5	Learn about Shift registers & counters

PERIYAR UNIVERSITY

PERIYARPALKALAINAGAR

SALEM– 636011

DEGREE OF MASTER OF SCIENCE

(CHOICE BASED CREDIT SYSTEM)

SYLLABUS FOR

M.Sc.,ELECTRONICS AND COMMUNICATION

(SEMESTER PATTERN)

(For Candidates admitted in the Colleges affiliated to
Periyar University from 2017-2018 onwards)

PROGRAMMEEDUCATIONALOBJECTIVES

PEO1:Toimprovethestudentsabilityto adaptto arapidlychangingenvironmentbynewskillsandnew competencies.

PEO2:Topromotethegraduatestodevelopsolutionstorealproblemsintheareasof Electronicsand communications.

PEO3:Toupgradethegraduatestothelatesttrendsintechnologyandtopursueresearchtomeetoutth e advanced developments in industries.

PEO4:AftersuccessfulcompletionofthiscourseastudentcanpursueengineeringcourseslikeM.E/ M.Tech/M.S with good GATE Score.

PEO 5:Tounderstandandappreciateprofessionalethics,communitylivingand nationbuildinginitiatives.

PROGRAMMEOUTCOMES

PO 1: GainingtheknowledgeinthesubjectofElectronics andCommunicationandapplytheprinciplesof the same to the requirements of the employer or for entrepreneurship.

PO2: Acquirein-depthknowledgeinthebroadareaof MicrocontrollersandCommunication systems,withanabilitytodiscriminate,evaluate, analyze andsynthesizetheacquiredknowledge.

PO 3:
Developtheabilitytounderstandclearlythestepsindesigningcommunicationsystem swhichare in tune with recent technology and adaptable for future challenges.

PO 4:
Learnandpracticetousetheengineeringsoftware,hardware,designandmodelingtech niquesthat are the latest in the field of electronics.

PO 5: Abilitytodesignanddeveloppracticalsolutionsforreal-timeproblemsinthedomainof Electronics and Communication.

SEMESTER-I

COREI:APPLIEDELECTRONICS OBJECTIVES

- Toupdatetheknowledgeaboutanalogcircuitsand its characteristics.
- Todevelopthebasicconceptsofanalogcircuitdesign.
- Toimparttheknowledge intheoscillatorsanditsdesign.

ExpectedCourseOutcomes (CO):

Afterthe completion ofthecourse, thestudentwill beable to:

CO1	Understandandanalyzeaboutthevariousdiodecharacteristicsand applications.	K2,K4
CO2	Comprehend the characteristics of various types of rectifiersandanalyze theregulationswithitsapplications.	K2,K4
CO3	Designthetransistorsandimplementingthebiasingconceptsandstudythe amplifications with its application	K3,K4
CO4	Analyzethetransistorcharacteristics,typesofamplifiersandthevarious types of feedback circuits.	K1,K4,K5
CO5	Developanabilitytodifferentiatetheoscillatorsand itsapplications.	K2,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

MappingwithProgrammeOutcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	M	S	L	S
CO3	M	M	S	S	M
CO4	L	S	M	L	S
CO5	S	S	L	S	S

*S-Strong;M-Medium;L-Low

SEMESTER-I

CORE-II:IC'S FABRICATIONANDITSAPPLICATIONS

OBJECTIVES

- Todesigntheintegratedcircuitsbased onourapplications.
- Todeveloptheknowledgein thebasicdigitalfilters circuitdesign.
- Tounderstandtheconceptsofmultivibratorsand design.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

*S-Strong;M-Medium;L-Low

CO1	Understandthefundamentalsof IC"Sandtheactiveandpassive components.AnalyzingtheFETfabrication.studythethinandthickfilm technology.	K1,K2
CO2	UnderstandtheOP AMPcircuitsanditsvariousapplications.	K2,K3,K4
CO3	Studytheoutputwavesbasedondesignandhowtoregulatethevoltages using op amp.	K3,K6
CO4	UnderstandthefiltersandtofindtheconceptsofADC/DACconverters.	K1,K2
CO5	DescribethefunctionsofMultivibrators,PLLandunderstandthevarious applications of 555 IC.	K4,K6

K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create

MappingwithProgrammeOutcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	L	S	L	S	L
CO2	S	M	M	S	S
CO3	S	M	S	S	M
CO4	L	S	M	L	M
CO5	M	S	L	M	S

SEMESTER-I

CORE-III:POWER ELECTRONICS

OBJECTIVES

- Tolearnthecharacteristicsofdifferenttypesofsemiconductordevicesandtheoperationofcontrolled rectifiers.
- Tounderstandtheoperationofchoppersandinverters.
- Tolearntheconceptofelectricdrivesanditsfunctions

ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandingthe types and the operations of thyristors andits characteristics.Studythefiringangle.Designtheconvertercircuitsandstudy	K1,K2
	the outputs .	
CO2	Understandstheconceptsofsinglephaseandthreephasecontrollers outputs.	K2,K3,K4
CO3	Analyzethethyristorscommutationmethodsandcomparisonswithits application	K1,K4
CO4	Abilityand understand thechoppersand switcheswithitsapplications .	K5,K6
CO5	Determinethedriversandthevariousphasecontrollers.Toknowthecurrent control and voltage control concepts .	K4,K6

K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create

MappingwithProgrammeOutcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	L
CO2	S	L	L	L	S
CO3	M	S	M	S	M
CO4	S	S	M	M	L
CO5	S	S	L	L	M

*S-Strong;M-Medium;L-Low

SEMESTER-I: ELECTIVE-I

SEMESTER-I CORE PRACTICAL-I:APPLIEDELECTRONICSANDDIGITAL ELECTRONICS LAB

OBJECTIVES

- Todesigningpowersupplysystems and tostudytheoutputs..

- Tocreatemultiplexeranddemultiplexercircuitsandverifyingof outputs.

- Todevelopcircuitforcounters,flip-flopsandregisters.

ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbe ableto:

CO1	Understandtheconceptsofpowersupply,oscillator,multivibrator,flip- flop and counters .	K2,K3
CO2	IdentifyTheDifferentWaysoperationsanddesigning.	K1,K6
CO3	Developingthevariousdigitalcircuitslikecounters,flip-flops and registers..	K4,K5
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**- Create		

MappingwithProgrammeOutcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	L	M	L	S
CO2	M	S	L	M	S
CO3	S	L	M	M	S

*S-Strong;M-Medium;L-Low

COREPRACTICALII: POWER ELECTRONICS LAB

OBJECTIVES

- TostudytheV-Icharacteristicsof various powerdevices.
- Tocreatethecircuitsof commutationsand verifyingitsoutputs.
- Todevelopcircuitformotorspeedcontrolforvariousapplications .

ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbe ableto:

CO1	UnderstandtheconceptsofpowersupplySCR,CommutationandLDR applications.	K2,K5
CO2	IdentifyTheDifferentWaysoperationsanddesigning.	K3
CO3	Developcircuitconstructionskillsandverifyingofoutputs.	K4,K6

K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**- Create

MappingwithProgrammeOutcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	L	S
CO2	M	S	S	L	S
CO3	S	L	S	M	M

*S-Strong;M-Medium;L-Low

SEMESTER- II

6. CORE-IV:ADVANCED MICROPROCESSORS AND INTERFACING

OBJECTIVES

- Tolearntheconcepts of x86processors.
- TounderstandtheoperationofRISC architecture.
- Tolearntheconceptofpagingand segmentation.

ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbe ableto:

CO1	Understandthe8085/8086microprocessoranditsoperations.Knowthe conceptsof memorymanagement.	K1,K5
CO2	Designthesimpleprograms of8086.Learningtheproceduresoftimedelay, loopingandaddressingmodes .	K3,K6
CO3	Designof80386architecture,addressingmodesandtoknowtheconcepts of paging and segmentations.	K4,K5
CO4	Understand thefunctionsofPentiumandintelprocessors .	K2,K5
CO5	KnowtheRISCprocessoranditsarchitectureissues.	K1,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**- Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	M	L	S	L
CO3	M	S	H	S	M
CO4	L	L	M	M	S
CO5	S	L	L	S	M

*S-Strong;M-Medium;L-Low

SEMESTER- II

COREV:ANALOG AND DIGITAL COMMUNICATION SYSTEM

OBJECTIVES

- Tolearntheconceptsaboutanaloganddigital modulationanddetection .

- TounderstandtheoperationTVscanningprocedures .

- Toimplementingtheconcepts ofHVdeflections.

- **ExpectedCourseOutcomes(CO):**

Afterthe completionofthecourse, thestudent willbe ableto:

CO1	Rememberingthevariouswavesandantennasfor transmission.	K1,K2
CO2	Rememberingofvariousanalogmodulations anditsapplications.	K1,K3
CO3	Toknowtheconceptsofpulsemodulationsanditstypes .	K4,K6
CO4	Understandtheconceptsdigitalmodulationsandcomparisons".	K2,K5
CO5	AnalyzingofTV circuits andevaluatingthesignalsinvarious stages. .	K4,K5
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**- Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	L	S	S	M	S
CO3	M	M	S	S	S
CO4	S	L	M	L	M
CO5	S	S	L	S	M

*S-Strong;M-Medium;L-Low

ELECTIVE-II SEMESTER-II

CORE PRACTICALIII: ADVANCED MICROPROCESSOR AND SIMULATIONLAB OBJECTIVES

- Towritetheassemblylanguageforvarious operationsand various conversions .
- Tocreatethecodingofvariousapplicationsand interfacings.
- Todeveloptheskills forvarious applications.

Todevelopcircuitformotorspeedcontrolforvariousapplications

ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandtheconceptsof arithmeticaloprations,ADC,DACand ON/OFFrelaycontrol.	K1,K4,K5
CO2	IdentifyTheDifferentWaysoperationsandinterfacedesigning.	K1,K3,K4
CO3	Developtheassemblylanguageprogrammingskillsandverifyingof outputs .	K3,K5,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		
MappingwithProgrammeOutcomes:		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	L	S	S	S
CO2	S	M	L	S	S
CO3	S	L	S	M	M

*S-Strong;M-Medium;L-Low

SEMESTER- II

10. COREPRACTICALIV:ANALOG AND DIGITAL COMMUNICATION LAB **OBJECTIVES**

- Tostudythevarious modulation techniquesandverifyingits outputs.
- Tocreatethecircuitsofcommutationsapplications.
- Todevelopthecircuitskillsofcommunicationsdevices.

ExpectedCourseOutcomes (CO):

Afterthe completion ofthecourse, thestudentwill beable to:

CO1	Understandtheconceptsof analogmodulation,pulsemodulationand CCTVconcepts.	K2,K3,K4
CO2	IdentifyTheDifferentWaysoperationsanddesigning.	K1.K4,K6
CO3	Developthecircuitskillsandverifyingofoutputs.	K4,K5,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

MappingwithProgrammeOutcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	S
CO2	M	S	M	L	S
CO3	S	S	M	S	S

*S-Strong;M-Medium;L-Low

EDC(OFFEREDBYOTHERDEPARTMENT)

COMMON PAPER:HUMAN RIGHTS

ONLINE COURSE:SWAYAM/MOOC(anyonecourse)

SEMESTER-III

CORE-VI:VLSI DESIGN AND VHDL PROGRAMMING

OBJECTIVES

- TolearnthebasicsofVLSItechnologyandVHDLprogramming.

- Topromotingtheknowledgeinmodelingtechniques andfeatures.

- ## ExpectedCourseOutcomes (CO):

Afterthe completionofthecourse, thestudent willbeable to:

CO1	UnderstandstheMOSdevicesand fabrications process.Howthen-MOS ANDp-MOSprocessed.	K1.K2
CO2	Knowthebasics ofVHDL.	K2`K3
CO3	UnderstandthemodelingtechniquesofVHDLDesignthemultipleprocess concepts .	K2,K4
CO4	Abilityandtounderstand thedataflowstylemodelingforvarious statements .	K1,K5
CO5	ApplyingtheadvancedconceptsinVHDL.Applyingtheoverloading techniques.	K3,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	L
CO2	S	M	M	M	S

CO3	S	S	S	S	L
CO4	M	S	M	L	M
CO5	S	L	L	S	S

*S-Strong;M-Medium;L-Low

PERIYAR UNIVERSITY

SEMESTER IV – EMBEDDED SYSTEM

COURSE OBJECTIVES:

- TounderstandthebasicsofembeddedC.
- TostudythearchitectureofPICmicrocontroller.
- TofamiliarizeinPIC programming.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

CO1	UnderstandingofCprogrammingconcepts anditsapplications .	K1,K2
CO2	Justifyingthe conditionaland loopingstatementsin C.	K2,K4
CO3	Designingtheembeddedsystemanditsconceptswithitsapplication	K4,K5
CO4	Abilityandtounderstand PICPROGRAMMING:PIC16F877andits instruction set uses.	K3,K5
CO5	Developsananalyzetheinterfacingtechniqueswithapplications.	K3,K6

K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	M	S	L	S
CO3	M	S	M	S	M
CO4	S	M	S	M	S
CO5	S	M	L	S	S

*S-Strong;M-Medium;L-Low

SEMESTER-IV

20. CORE–X:COMPUTERNETWORKSANDOPERATINGSYSTEMS

OBJECTIVES:

- Tounderstandtheprinciplesofcomputernetworksandoperatingsystems
- Togaintheconceptsofnetworks andoperatingsystems
- Toget aknowledgein differentnetworklayers andIPC
- Toknowtheprinciples ofLinux.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudentwillbeable to:

CO1	Rememberingthe networkingconcepts and illustrate the OSImodel.	K1,K3
CO2	Understandstheoperationsofvariouslayersandapplytherouting concepts`	K2,K4
CO3	Designthetransistorsandimplementingthe biasingconceptsandstudethe amplifications withitsapplication	K1,K4

CO4	Abilityand designing the various layersandits applications.study the UDP/IP Functions and categories the roll of WWW.	K5,K6
CO5	DevelopsanabilitytoLINUXCOMMANDS ,threadsanddeadlocks.	K4,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	L
CO2	S	M	M	L	S
CO3	M	M	S	M	M
CO4	L	L	M	L	S
CO5	S	L	L	M	S

*S-Strong;M-Medium;L-Low

24. COREPRACTICAL-VII:EMBEDDED SYSTEMS AND SIMULATION LAB

OBJECTIVES

- WritesimpleprogramsinPICmicrocontrollerandARMProcessor.
- UnderstandthefunctionsofperipheralsinPICmicrocontroller
- SolvetherealworldproblemsthroughembeddedSystem.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

CO1	UnderstandtheconceptsofPICbasedembeddedsystemsandARM basedembeddedsystems.	K1,K3,K4
CO2	IdentifytheDifferentWaysoperationsanddesigning.	K3,K4,K5
CO3	Developthecodingskillsandverifyingofoutputs.	K4,K5,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

MappingwithProgrammeOutcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	L	M	S
CO2	S	L	M	M	M
CO3	S	L	S	M	S

*S-Strong;M-Medium;L-Low

SEMESTER-I

ELECTIVE-I:NETWORK AND JAVA PROGRAMMING

OBJECTIVES

- Tounderstandtheprinciplesofcomputernetworksandoperatingsystems

- Togaintheconceptsofnetworksanditsstandards.

- Toget aknowledgeindifferent networklayersand its protocols.

- ToknowtheprinciplesofJAVAanditsoperators concepts.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandingandanalyzingaboutthevariousnetworksanditsapplications.	K1,K2
CO2	Studythecharacteristicsofvarious OSIlayersandapplications.	K3,K4
CO3	DiscussionandDesigntheClanguagesandJAVAlanguages.	K3,K5
CO4	Abilityandtounderstand classesandobjects.	K5,K6
CO5	Developingofpackagesanditsuses .	K3,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	L
CO2	M	M	S	M	M
CO3	M	S	L	S	M
CO4	L	M	M	L	S
CO5	S	L	M	M	S

*S-Strong;M-Medium;L-Low

SEMESTER–I

ELECTIVE-I:MOBILE COMMUNICATION

OBJECTIVES

- TodevelopafundamentalunderstandingofmobileCommunication Systems.

- Toimpartknowledgeonbasicsofcell structureandtheirapplications.

- Toexposethebasicsof GSMandtelecommunicationarchitecture.

- **ExpectedCourseOutcomes(CO):**

Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandingtheconceptsofmobilecommunications and itsfrequency. Analyzethehandoff ,cellsplittingandfrequencyreuse .	K1,K3
CO2	Discussionofantennasanditsconcepts.howthepoweriscontrolledandthe concepts of MTSO .	K3,K4
CO3	Categorizethemultiplexingtechniquesanditscomparisons .	K4,K6
CO4	Abilityandtounderstand theGSMconcepts,handoff,Bluetoothand IEEE procedures .	K3.K5
CO5	Howtoconstructintelligencecellandtheconcepts ofmacroandmicrocells.	K5,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	M
CO2	S	M	S	M	S
CO3	M	S	S	S	M
CO4	S	L	M	M	S
CO5	S	L	M	S	S

*S-Strong;M-Medium;L-Low

SEMESTER-II

ELECTIVE-II:BIOMEDICAL INSTRUMENTATION

OBJECTIVES

- Toimparttheknowledgeaboutbiomedical electrodesandtransducers.

- Tofamiliarizeinbiomedicalrecorders.

- Tolearntheimportantbio medicalinstruments.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

CO1	Identifythevariousbiomedicalelectrodes.understandtheECG,EEGand EMG electrodes with its advantages .	K1,K3
CO2	Designingofbasicrecodingsystems.studytheoperationsofvariousblocks of recording system.	K3,K4
CO3	Understandthe conceptofblood flowmeter .studythe conceptsof PcO2. Studytheconcepts of blood cell count .	K4,K5
CO4	Abilityandtounderstand theconceptsofx raymachine,CTscanner and NMR.	K3,K6
CO5	Designingofendoscopy,pacemakeranddefibrillatorblockdiagramsandits functions .	K4,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5

CO1	S	S	M	S	L

CO2	M	M	S	M	L
CO3	M	S	S	M	M
CO4	L	M	M	M	S
CO5	S	M	S	L	S

*S-Strong;M-Medium;L-Low

SEMESTER- III

ELECTIVE-III:ANDROID DEVELOPMENT TOOLS AND APPLICATTIONS OBJECTIVES

- Toprovideagoodunderstandingofandroid.

- Toprovideaoverviewabout thevariousembeddeddevices.

- Toimpartknowledgeinthedesignanddevelopment ofaudio,videoandcamera.

ExpectedCourseOutcomes (CO):
Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandingand analyzingtheconceptsofandroidtools	K2,K3
CO2	Justificationofdebugginganditsapplications.Analyzethevarious debuggingconcepts .	K1,K3
CO3	Abilityto differentiate the various tools andits priorities .	K3,K4
CO4	Understandanddeveloptheskillsofaudio,videoandcamera.	K2,K6

CO5	Designingtherealtimeapplicationsforticketbooking,bankapplications andother governmentrelated applications .	K4,K6
K1-Remember;**K2**- Understand; **K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**– Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	L	L	M	L	M
CO2	M	S	M	L	S
CO3	M	S	L	L	M
CO4	L	M	M	S	L
CO5	S	L	M	S	M

*S-Strong;M-Medium;L-Low

SEMESTER- IV

ELECTIVE-IV:THIN FILM AND NANOTECHNOLOGY OBJECTIVES

- Toprovideknowledgeabout thinfilmsandpreparationtechniques.

- Tofamiliarizeinnanoelectronicsandnanodevices .

- Toknowthevarious applications ofnanodevices .

2.ExpectedCourseOutcomes(CO):

Afterthe completionofthecourse, thestudent willbeable to:

CO1	Understandingandanalyzingtheconceptsofvacumnpumps,gaugesand thin film growth.	K2.K3
CO2	Justificationofthinfilmdepositionforphysicalvacuumdeposition,e-beam. MBE,sputtering,laserablation,chemical-CVDMOCVDandElectrochemical deposition.	K1.K5
CO3	Designtheconceptsofthickfilm,variouspropertiesandadhesion properties .	K4,K6
CO4	Abilityandtounderstandthenanoelectronics andintegratedsystem concepts .	K3,K5
CO5	Designingthevarious nano devicesandunderstandthe variousapplications .	K4,K6
K1-Remember;**K2**- Understand;**K3**-Apply;**K4**-Analyze;**K5**-Evaluate;**K6**-Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	M	M
CO2	S	M	M	M	S
CO3	M	S	L	S	M
CO4	L	L	M	L	S
CO5	S	M	L	M	S

*S-Strong;M-Medium;L-Low

PERIYAR NIVERSITY

PERIYAR PALKALAI NAGAR

SALEM – 636011

DEGREE OF MASTER OF SCIENCE
(CHOICE BASED CREDIT SYSTEM)

SYLLABUS FOR

M.Sc., ELECTRONICS AND COMMUNICATION

(SEMESTER PATTERN)

(For Candidates admitted in the Colleges

affiliated toPeriyar University from

2021-2022 onwards)

PROGRAMME EDUCATIONAL OBJECTIVES

PEO 1: To improve the students ability to adapt to a rapidly changing environment by new skills and new competencies.

PEO 2: To promote the graduates to develop solutions to real problems in the areas of Electronics and communications.

PEO 3: To upgrade the graduates to the latest trends in technology and to pursue research to meet out the advanced developments in industries.

PEO 4: After successful completion of this course a student can pursue engineering courses like M.E/M.Tech/M.S with good GATE Score.

PEO 5: To understand and appreciate professional ethics, community living and nation building initiatives.

PROGRAMME OUTCOMES

PO 1: Gaining the knowledge in the subject of Electronics and Communication and apply the principles of the same to the requirements of the employer or for entrepreneurship.

PO 2: Acquire in-depth knowledge in the broad area of Microcontrollers and Communication systems, with an ability to discriminate, evaluate, analyze and synthesize the acquired knowledge.

PO 3: Develop the ability to understand clearly the steps in designing communication systems which are in tune with recent technology and adaptable for future challenges.

PO 4: Learn and practice to use the engineering software, hardware, design and modeling techniques that are the latest in the field of electronics.

PO 5: Ability to design and develop practical solutions for real-time problems in the domain of Electronics and Communication.

CORE I: APPLIED ELECTRONICSOBJECTIVES

• To update the knowledge about analog circuits and its characteristics.

• To develop the basic concepts of analog circuit design.

• To impart the knowledge in the oscillators and its design.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Understand and analyze about the various diode characteristics and applications.	K2,K4
CO2	Comprehend the characteristics of various types of rectifiers and analyze the regulations with its applications.	K2,K4
CO3	Design the transistors and implementing the biasing concepts and study the amplifications with its application	K3,K4
CO4	Analyze the transistor characteristics, types of amplifiers and the various types of feedback circuits.	K1,K4,K5
CO5	Develop an ability to differentiate the oscillators and its applications .	K2,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

Mapping with Programme Outcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	M	S	L	S
CO3	M	M	S	S	M
CO4	L	S	M	L	S
CO5	S	S	L	S	S

*S-Strong; M-Medium; L-Low

SEMESTER-I

CORE-II: IC'S FABRICATION AND ITS APPLICATIONS

OBJECTIVES

• To design the integrated circuits based on our applications.

• To develop the knowledge in the basic digital filters circuit design.

• To understand the concepts of multivibrators and design.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Understand the fundamentals of IC"S and the active and passive components. Analyzing the FET fabrication . study the thin and thick film technology.	K1,K2

CO2	Understand the OP AMP circuits and its various applications.	K2,K3,K4
CO3	Study the output waves based on design and how to regulate the voltages using op amp.	K3,K6
CO4	Understand the filters and to find the concepts of ADC/ DAC converters.	K1,K2
CO5	Describe the functions of Multivibrators , PLL and understand the various applications of 555 IC.	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	L	S	L	S	L
CO2	S	M	M	S	S
CO3	S	M	S	S	M
CO4	L	S	M	L	M
CO5	M	S	L	M	S

*S-Strong; M-Medium; L-Low

SEMESTER-I

CORE- III: INDUSTRIAL ELECTRONICS

OBJECTIVES

• To learn the characteristics of different types of semiconductor devices and the operation of controlled rectifiers.

• To understand the operation of choppers and inverters.

• To learn the concept of electric drives and its functions

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understanding the types and the operations of thyristors and its characteristics. Study the firing angle.Design the converter circuits and study the outputs .	K1,K2
CO2	Understands the concepts of single phase and three phase controllers outputs.	K2,K3,K4
CO3	Analyze the thyristors commutation methods and comparisons with its application	K1,K4
CO4	Ability and understand the choppers and switches with its applications .	K5,K6
CO5	Determine the drivers and the various phase controllers . To know the current control and voltage control concepts .	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	L
CO2	S	L	L	L	S

CO3	M	S	M	S	M
CO4	S	S	M	M	L
CO5	S	S	L	L	M

*S-Strong; M-Medium; L-Low

SEMESTER-I: ELECTIVE -I

SEMESTER-I CORE PRACTICAL- I: APPLIED ELECTRONICS AND DIGITALELECTRONICS LAB

OBJECTIVES

- To designing power supply systems and to study the outputs . .

- To create multiplexer and demultiplexer circuits and verifying of outputs.

- To develop circuit for counters ,flip-flops and registers.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Understand the concepts of power supply, oscillator, multivibrator , flip-flop and counters .	K2,K3
CO2	Identify The Different Ways operations and designing.	K1,K6
CO3	Developing the various digital circuits like counters ,flip-flops and registers . .	K4,K5
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

Mapping with Programme Outcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	L	M	L	S
CO2	M	S	L	M	S
CO3	S	L	M	M	S

*S-Strong; M-Medium; L-Low

SEMESTER-I

CORE PRACTICAL II: INDUSTRIAL ELECTRONICS LAB

OBJECTIVES

- To study the V-I characteristics of various power devices.

- To create the circuits of commutations and verifying its outputs.

- To develop circuit for motor speed control for various applications .

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the concepts of power supply,SCR, Commutation and LDR applications.	K2,K5
CO2	Identify The Different Ways operations and designing.	K3
CO3	Develop circuit construction skills and verifying of outputs .	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	L	S
CO2	M	S	S	L	S
CO3	S	L	S	M	M

*S-Strong; M-Medium; L-Low

SEMESTER - II

CORE-IV: ADVANCED MICROPROCESSORS AND INTERFACINGOBJECTIVES

- To learn the concepts of x86 processors.

- To understand the operation of RISC architecture.

- To learn the concept of paging and segmentation.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the 8085/8086 microprocessor and its operations. Know the concepts of memory management .	K1,K5
CO2	Design the simple programs of 8086. Learning the procedures of time delay , looping and addressing modes .	K3,K6
CO3	Design of 80386 architecture , addressing modes and to know the concepts of paging and segmentations.	K4,K5
CO4	Understand the functions of Pentium and intel processors .	K2,K5
CO5	Know the RISC processor and its architecture issues.	K1,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	M	L	S	L
CO3	M	S	H	S	M
CO4	L	L	M	M	S
CO5	S	L	L	S	M

*S-Strong; M-Medium; L-Low

SEMESTER - II

CORE V: ANALOG AND DIGITAL COMMUNICATION SYSTEM

OBJECTIVES

- To learn the concepts about analog and digital modulation and detection .

- To understand the operation TV scanning procedures .

- To implementing the concepts of HV deflections.

- **Expected Course Outcomes (CO):**

After the completion of the course, the student will be able to:

CO1	Remembering the various waves and antennas for transmission.	K1,K2
CO2	Remembering of various analog modulations and its applications.	K1,K3
CO3	To know the concepts of pulse modulations and its types .	K4,K6
CO4	Understand the concepts digital modulations and comparisons".	K2,K5
CO5	Analyzing of TV circuits and evaluating the signals in various stages. .	K4,K5
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	L	S	S	M	S
CO3	M	M	S	S	S
CO4	S	L	M	L	M
CO5	S	S	L	S	M

*S-Strong; M-Medium; L-Low

SEMESTER-II:

ELECTIVE-II

SEMESTER-II

10.CORE PRACTICAL III: ADVANCED MICROPROCESSOR AND SIMULATION LABOBJECTIVES

- To write the assembly language for various operations and various conversions .

- To create the coding of various applications and interfacings.

- To develop the skills for various applications.

To develop circuit for motor speed control for various applications

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the concepts of arithmetical oprations , ADC,DAC and ON/OFF relay control.	K1,K4,K5
CO2	Identify The Different Ways operations and interface designing.	K1,K3,K4
CO3	Develop the assembly language programming skills and verifying of outputs .	K3,K5,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	L	S	S	S
CO2	S	M	L	S	S
CO3	S	L	S	M	M

*S-Strong; M-Medium; L-Low

SEMESTER - II

CORE PRACTICAL IV: ANALOG AND DIGITAL COMMUNICATION LABOBJECTIVES

- To study the various modulation techniques and verifying its outputs.
- To create the circuits of commutations applications .
- To develop the circuit skills of communications devices.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Understand the concepts of analog modulation , pulse modulation and CCTV concepts .	K2,K3,K4
CO2	Identify The Different Ways operations and designing.	K1.K4,K6
CO3	Develop the circuit skills and verifying of outputs .	K4,K5,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	S
CO2	M	S	M	L	S
CO3	S	S	M	S	S

*S-Strong; M-Medium; L-Low

EDC (OFFERED BY OTHER DEPARTMENT)
COMMON PAPER: HUMAN RIGHTS
ONLINE COURSE: SWAYAM/MOOC (any
one course)SEMESTER-III

CORE-VI: VLSI DESIGN AND VHDL PROGRAMMING

OBJECTIVES

- To learn the basics of VLSI technology and VHDL programming.

- To promoting the knowledge in modeling techniques and features .

- **Expected Course Outcomes (CO):**

After the completion of the course, the student will be able to:

CO1	Understands the MOS devices and fabrications process. How the n-MOS AND p-MOS processed .	K1.K2
CO2	Know the basics of VHDL.	K2`K3
CO3	Understand the modeling techniques of VHDL Design the multiple process concepts .	K2,K4
CO4	Ability and to understand the data flow style modeling for various statements .	K1,K5
CO5	Applying the advanced concepts in VHDL. Applying the overloading techniques.	K3,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	L
CO2	S	M	M	M	S
CO3	S	S	S	S	L
CO4	M	S	M	L	M
CO5	S	L	L	S	S

*S-Strong; M-Medium; L-Low

SEMESTER-III

CORE-VII: INDUSTRIAL AUTOMATION

OBJECTIVES

- To provide knowledge about data acquisition and control an external measuring device by interfacing to a computer.

- To familiarize in signal conditioning and various processing tools.

- To become competent in designing virtual instruments for various industrial measurements and applications.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the basics of LABVIEW and its tools.	K1,K2
CO2	Know the arrays and clusters concepts .	K3,K4

CO3	Understand the Data acquisition procedure and hardware configuration . Design the software solutions for DAQ.	K2,K5
CO4	Creating the PLC programming and intermediate functions**.**	K3,K6
CO5	Develop the ability for Data handling and PLC functions .	K5,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	L	S
CO2	S	L	S	L	S
CO3	M	M	L	L	M
CO4	L	S	M	S	S
CO5	S	S	M	L	L

*S-Strong; M-Medium; L-Low

SEMESTER-III

CORE VIII – MICROCONTROLLER 8051

OBJECTIVES

- Familiarize the basic architecture of 8051 microcontroller.

- Program 8051microprocessor using Assembly Level Language and C.

- Interface 8051 to external memory and I/O devices using its I/O ports.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Remember the 8051 architecture and memory concepts .	K1,K3
CO2	Understands the various instructions of 8051.	K2,K3
CO3	Design of the stack and analyzing the interfacing concepts .	K4,K5
CO4	Classify the assembly language programming and the port operations. Understand that how to apply C language in the controllers .	K4,K6
CO5	Create the interfacing concepts for stepper motor and traffic light controllers . analyzing the ADC and DAC conversions .	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	M	S	M	S
CO3	S	M	S	L	M
CO4	S	S	M	S	S
CO5	M	M	S	M	S

*S-Strong; M-Medium; L-Low

SEMESTER-III:

ELECTIVE-III SEMESTER-III

CORE PRACTICAL-V: INDUSTRIAL AUTOMATION LAB

OBJECTIVES

- To designing virtual instruments for various industrial measurements for various applications .
- To create ladder diagrams from PLC functions and Data Handling Functions
- To create PLC systems in their applications to various industries.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the concepts of ADC, DAC using DAQ . Understand LVDT, instrumentation amplifier , flow measuremenrs and ladder networks .	K1,K4,K6
CO2	Identify the Different Ways operations and designing.	K2,K4,K5
CO3	Develop the circuit skills and verifying of outputs .	K2,K5,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

Mapping with Programme Outcomes:

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	L	S
CO2	M	M	S	L	S
CO3	S	L	S	M	S

*S-Strong; M-Medium; L-Low

SEMESTER - III

CORE PRACTICAL VI: MICROCONTROLLER AND VHDL LABOBJECTIVES

- To writing assembly language programs for data transfer, arithmetic, Boolean and logical instructions.
- To writing assembly language programs for code conversions

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the concepts of arithmetical , Boolean ,generation of wave forms using microcontroller. Understand the concepts of gates, adders , subtractors, multiplexers ,LCDs and coders using VHDL language. concepts .	K1,K3,K6
CO2	Identify the Different Ways operations and designing.	K2,K3,K5
CO3	Develop the programming skills and verifying of outputs .	K3,K4,K5
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

Mapping with Programme Outcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	L	S
CO2	M	M	S	M	S
CO3	S	L	M	S	S

*S-Strong; M-Medium; L-Low

SEMESTER-IV

CORE-IX: EMBEDDED SYSTEMS

OBJECTIVES:
- To understand the basics of embedded C.
- To study the architecture of PIC microcontroller.
- To familiarize in PIC programming.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Understanding of C programming concepts and its applications .	K1,K2
CO2	Justifying the conditional and looping statements in C.	K2,K4
CO3	Designing the embedded system and its concepts with its application	K4,K5
CO4	Ability and to understand PIC PROGRAMMING: PIC 16F877 and its instruction set uses.	K3,K5
CO5	Develops an analyze the interfacing techniques with applications .	K3,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	M	S	L	S
CO3	M	S	M	S	M
CO4	S	M	S	M	S
CO5	S	M	L	S	S

*S-Strong; M-Medium; L-Low

SEMESTER-IV

CORE –X: COMPUTER NETWORKS AND OPERATING SYSTEMSOBJECTIVES:

- To understand the principles of computer networks and operating systems

- To gain the concepts of networks and operating systems

- To get a knowledge in different network layers and IPC

- To know the principles of Linux.

Expected Course Outcomes (CO):
After the completion of the course, the student will be able to:

CO1	Remembering the networking concepts and illustrate the OSI model.	K1,K3
CO2	Understands the operations of various layers and apply the routing concepts`	K2,K4
CO3	Design the transistors and implementing the biasing concepts and stude the amplifications with its application	K1,K4
CO4	Ability and designing the various layers and its applications .study the UDP/IP Functions and categories the roll of WWW.	K5,K6
CO5	Develops an ability to LINUX COMMANDS ,threads and dead locks.	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	L
CO2	S	M	M	L	S
CO3	M	M	S	M	M
CO4	L	L	M	L	S
CO5	S	L	L	M	S

*S-Strong; M-Medium; L-Low

SEMESTER – IV: 23.ELECTIVE-IV SEMESTER-IV

CORE PRACTICAL-VII: EMBEDDED SYSTEMS AND SIMULATION LAB

OBJECTIVES

- Write simple programs in PIC microcontroller and ARM Processor.
- Understand the functions of peripherals in PIC microcontroller
- Solve the real world problems through embedded System.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understand the concepts of PIC based embedded systems and ARM based embedded systems.	K1,K3,K4
CO2	Identify the Different Ways operations and designing.	K3,K4,K5
CO3	Develop the coding skills and verifying of outputs .	K4,K5,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

Mapping with Programme Outcomes:					
PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	L	M	S
CO2	S	L	M	M	M
CO3	S	L	S	M	S

*S-Strong; M-Medium; L-Low

SEMESTER – IV: 25.PROJECT VIVA-VOCE

SEMESTER – I

ELECTIVE-I: MOBILE COMMUNICATION

OBJECTIVES

- To develop a fundamental understanding of mobile Communication Systems.

- To impart knowledge on basics of cell structure and their applications.

- To expose the basics of GSM and telecommunication architecture.

• Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understanding the concepts of mobile communications and its frequency. Analyze the hand off , cell splitting and frequency reuse .	K1,K3
CO2	Discussion of antennas and its concepts . how the power is controlled and the concepts of MTSO .	K3,K4
CO3	Categorize the multiplexing techniques and its comparisons .	K4,K6
CO4	Ability and to understand the GSM concepts , handoff, Bluetooth and IEEE procedures .	K3.K5
CO5	How to construct intelligence cell and the concepts of macro and micro cells .	K5,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	M
CO2	S	M	S	M	S
CO3	M	S	S	S	M
CO4	S	L	M	M	S
CO5	S	L	M	S	S

*S-Strong; M-Medium; L-Low

SEMESTER-II

ELECTIVE-II: BIOMEDICAL INSTRUMENTATION

OBJECTIVES

- To impart the knowledge about bio medical electrodes and transducers.
- To familiarize in bio medical recorders.
- To learn the important bio medical instruments.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Identify the various biomedical electrodes . understand the ECG,EEG and EMG electrodes with its advantages .	K1,K3
CO2	Designing of basic recoding systems . study the operations of various blocks of recording system.	K3,K4
CO3	Understand the concept of blood flow meter .study the concepts of PcO2. Study the concepts of blood cell count .	K4,K5
CO4	Ability and to understand the concepts of x ray machine , CT scanner and NMR.	K3,K6
CO5	Designing of endoscopy, pacemaker and defibrillator block diagrams and its functions .	K4,K6

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	L
CO2	M	M	S	M	L
CO3	M	S	S	M	M
CO4	L	M	M	M	S
CO5	S	M	S	L	S

*S-Strong; M-Medium; L-Low

SEMESTER –III ELECTIVE-III: INTERNET OF THINGS

OBJECTIVES

• To provide a good understanding of Internet of Things (IoT) .

• To provide a overview about the various protocol standards .

• To impart knowledge in the design and development of IoT systems with enablement ensuring security.

Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understanding the IoT Design Methodology , IoT Platforms , IoT Network and Cloud Services and IoT Applications .	K2,K4
CO2	Justification of wired and Wireless Communication & Network Protocols 802.11, BLE,NFC , LORA and Zigbee. Study the concepts of Wireless Sensor and adhoc Networks, Optimization,Industrial and Automotive Networks and QoS in IoT Systems.	K2,K3
CO3	Design the embedded devices, Embedded Hardware, Connected Sensors and Actuators . study the Controllers , Battery Life Conservation and designing with Energy Efficient Devices . Understand the concepts of SoCs, CC32XX Architecture and CC32XX Launch pad for Rapid Internet timers .	K3,K5
CO4	Ability and to understand IoT Software Architecture ,Operating Systems for IoT Applications and Building Android Applications. The recommendation of Components for IoT Applications. Introduction to Embedded Linux.	K4,K6
CO5	Evaluation the management of data in the context of the Internet of Things Specific topics include Data sources in IoT and Data Types in IoT. Study the various applications.	K5,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** – Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	M	L
CO2	S	S	L	M	S
CO3	M	M	S	M	S
CO4	L	M	M	M	S
CO5	S	S	L	S	S

*S-Strong; M-Medium; L-Low

SEMESTER - IV

ELECTIVE-IV : THIN FILM AND NANO TECHNOLOGYOBJECTIVES

• To provide knowledge about thin films and preparation techniques.

• To familiarize in nano electronics and nano devices .

• To know the various applications of nano devices .

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Expected Course Outcomes (CO):

After the completion of the course, the student will be able to:

CO1	Understanding and analyzing the concepts of vacumn pumps ,gauges and thin film growth.	K2.K3
CO2	Justification of thin film deposition for physical vacuum deposition, e-beam. MBE, sputtering, laser ablation, chemical-CVD MOCVD and Electrochemical deposition.	K1.K5
CO3	Design the concepts of thick film , various properties and adhesion properties .	K4,K6
CO4	Ability and to understand the nano electronics and integrated system concepts .	K3,K5
CO5	Designing the various nano devices and understand the various applications .	K4,K6
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create		

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	M	M
CO2	S	M	M	M	S
CO3	M	S	L	S	M
CO4	L	L	M	L	S
CO5	S	M	L	M	S

*S-Strong; M-Medium; L-Low