



# **G.VENKATASWAMY NAIDU COLLEGE (Autonomous), KOVILPATTI.**

**Affiliated to Manonmaniam Sundaranar University – Tirunelveli.**

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## **Programme Outcomes - Department of Electronics**

<b>GPO No.</b>	<b>Programme Outcomes</b>
PO1	Ability to apply the knowledge of mathematics & technology in solving problems and conduct Electronics experiments to analyze and interpret data.
PO2	Identify, formulate and analyze various aspects of circuit designing in Electronics.
PO3	Build the capacity to rectify the problems in design and manage Electronic systems.,
PO4	Ability to use techniques, skills and modern technological and scientific software tools for professional practices.
PO5	Ability to communicate effectively in order to provide solutions for the existing problems and propose electronic system designs.
PO6	Work as a team to identify problems in the areas of communication and embedded systems and provide efficient solutions using modern electronics practices.
PO7	Recognize the need for change and engage students in lifelong learning.

## **Programme Specific Outcomes - Department of Electronics**

<b>PSO No.</b>	<b>Intended Programme Specific Outcomes</b>
PSO1	Design, implement and test Electronics and Communication systems using analytical knowledge with the available modern hardware and software tools.
PSO2	Develop the skills of students in problem solving techniques and asses the social and environmental issues by embedding the ethics and manage different projects in multidisciplinary areas.
PSO3	Ability to make use of acquired technical knowledge for successful career and qualify for the competitive examinations at the National and Global levels.



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**Course Outcome - Department of Electronics**

**B.Sc., Electronics**

**FIRST SEMESTER**

**Core -1**

**Semiconductor Devices (U20EL101)**

CO No.	Course Outcome
<b>CO1</b>	identify the basics of passive and active components
<b>CO2</b>	understand the concepts of semiconductor devices
<b>CO3</b>	apply the fundamental principle of semiconductor physics to study the parameters of semiconductor devices.
<b>CO4</b>	analyze the functions of electrical and electronic components
<b>CO5</b>	evaluate the principle of operations of passive and active components

**Core Lab -1**

**Semiconductor Devices – Lab (U20EL1P1)**

CO No.	Course Outcome
<b>CO1</b>	learn and recognize the electronics components and examine the vi characteristics of semiconductor devices.
<b>CO2</b>	calculate various device parameters values from their iv characteristics.
<b>CO3</b>	extract important information from the graphical plots of device characteristics
<b>CO4</b>	interpret the experimental data to understand the behavior of the device.
<b>CO5</b>	implement the circuits using the concepts of semiconductor devices



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## **Elective Generic-1**

## **C Programming (U20EL1A1)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	understand the concept of data types
<b>CO2</b>	understand the concept of arrays, pointers and structures
<b>CO3</b>	use concept of modular programming by writing functions and using them to form a complete program
<b>CO4</b>	implement conditional branching, iteration and recursion
<b>CO5</b>	develop algorithms for arithmetic and logical problems

## **Elective Generic Lab -1**

## **Programming In C – Lab (U20EL1AP)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	understand the concept of compiler and interpreter
<b>CO2</b>	Read, understand and trace the execution of programs written in c language.
<b>CO3</b>	Implement programs with pointers and arrays, perform pointer arithmetic and use the pre-processor.
<b>CO4</b>	write programs that perform operations using derived data types
<b>CO5</b>	Develop confidence for self-education and ability for life-long learning needed for computer language.



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## SECOND SEMESTER

### Core - 2 Digital Electronics and its Applications (U20EL202)

CO No.	Course Outcome
CO1	identify the basic concepts of digital electronic circuits
CO2	understand the number systems, codes, logic gates, Boolean algebra, combinational, sequential circuits and different memory storage types.
CO3	apply the concept of minimization techniques for designing a simplified logic circuit and memory devices
CO4	analyze the principle of various digital circuits
CO5	evaluate the functions of various digital circuits

### Core Lab - 2 Digital Electronics- Lab (U20EL2P2)

CO No.	Course Outcome
CO1	acquire knowledge on logic gates, combinational and sequential circuits.
CO2	apply the minimization techniques to design different logic circuit
CO3	analyze and prepare the report on the experiments carried out
CO4	verify the output of the digital experiments
CO5	design application oriented various digital circuits



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## **Elective Generic 2**

## **Python Programming (U20EL2A2)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	understand the basic concept of the python programming
<b>CO2</b>	understand and analyze the concepts of the file i/o using python programming
<b>CO3</b>	develop a skill to implement python programming
<b>CO4</b>	develop a skill to implement string operations and tuples in python programming language.
<b>CO5</b>	create and execute the python programs

## **Elective Generic Lab -2**

## **Python Programming-Lab (U20EL2A2)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	acquire practical knowledge of working with python
<b>CO2</b>	write, test and debug python programs
<b>CO3</b>	implement conditionals and loops for python programs
<b>CO4</b>	use functions and represent compound data using lists, tuples and dictionaries
<b>CO5</b>	create an own program using the skilled learned.



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## THIRD SEMESTER

### Core-3

### Electronic Circuits (U20EL303)

CO No.	Course Outcome
CO1	identify the circuit concepts
CO2	get a clear idea about designing efficient power supply for various circuits
CO3	illustrate the principles and operations of amplifiers and oscillators.
CO4	Use the gained knowledge in troubleshooting faulty electronic circuits
CO5	Apply the gained knowledge in electronic circuits to design circuits of their own

### Core-4

### Mathematics For Electronics (U20EL304)

CO No.	Course Outcome
CO1	understanding of standard test signals and systems in ct and dt domain
CO2	applying and understanding the principles of analyzing the continuous time signals by fourier series and its limitations
CO3	applying and analyzing the learned knowledge to find the types of signals and systems
CO4	analyze and evaluate the signals with trigonometric series representation
CO5	analyze and evaluate the signals for its harmonic terms.



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## **Core Lab -3**

## **Electronic Circuits – lab (U20EL3P3)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	recognize the usage of electronic devices and circuits.
<b>CO2</b>	demonstrate power supplies, wave shaping circuits, amplifiers and oscillators effectively.
<b>CO3</b>	analyze and test the electronic circuits with modern tools
<b>CO4</b>	evaluate and troubleshoot with the technical skills learned and design circuits.
<b>CO5</b>	work in a team to build circuits of their own and interpret data.

## **Core Lab - 4**

## **Workshop (U20EL3P4)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	ability to understand and get the hands on experience about the electronics components used in the electronics laboratory
<b>CO2</b>	understanding the essential design consideration of power supply units
<b>CO3</b>	apply the concept learned to the identification of transformer and troubleshooting
<b>CO4</b>	apply & analyze the concept involved in household wiring principles including circuit breaker-ELCB, MCB
<b>CO5</b>	constructing PCB layout and PCB making.



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## **Core Elective-1**

### **Electronic Communication Systems (U20EL3E1A)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	understand the basic concepts, requirement specifications and designs in communication system
<b>CO2</b>	apply the adequate electronics communication skills and design noise-free analog communication systems
<b>CO3</b>	analyze and test the analog electronic communication systems for given specifications
<b>CO4</b>	work in a team using technical knowhow, common tools and environments to achieve project objectives
<b>CO5</b>	evaluate the technical skills and engage them in lifelong learning and become a skilled electronics persona

## **Core Elective -1**

### **Computer Hardware & Networks (U20EL3E1B)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	remember and understand the computer hardware, network model and physical layer concepts
<b>CO2</b>	recognize error free transmission of data and analyze data collision with various protocols
<b>CO3</b>	describe the various network layer protocols
<b>CO4</b>	analyze the addressing entities of a network with implementation of TCP, UDP protocols
<b>CO5</b>	illustrate the real time applications of networks and explain the fundamentals of SDN & its operation





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## **Core Elective -1      Fiber Optic Communication (U20EL3E1C)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	learn the basic principles of optical fiber communication with different modes of light propagation
<b>CO2</b>	understand the transmission characteristics and losses in optical fiber and study its components and its applications along with its functionalities
<b>CO3</b>	identify and characterize different components of an optical fiber communication link
<b>CO4</b>	analyze optical source, fiber and detector operational parameters
<b>CO5</b>	apply the technological skills, viz., optical amplifiers, optical switching and networking technology in creating new concepts

## **Employability Enhancement:1**

## **Consumer Electronics (U20EL3EEA)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	identify the principles of consumer electronic appliances like microwave ovens, photocopier, CCTV & DTH etc.,
<b>CO2</b>	understand the fundamental concepts of household and office devices
<b>CO3</b>	interpret the main features of electronic appliances
<b>CO4</b>	analyze the care and maintenance of electronic home and office devices
<b>CO5</b>	evaluate the working principles of the consumer electronics appliances



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## **Employability Enhancement-I**

## **Audio Electronics (U20EL3EEB)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	get a clear idea about mechanical wave motions and audio electronic circuits
<b>CO2</b>	understanding the principles of acoustics sound systems
<b>CO3</b>	examines the principles and operations of audio electronic circuits such as microphones and loudspeakers.
<b>CO4</b>	apply the gained knowledge in designing best acoustics sound systems
<b>CO5</b>	examines the operations and types of loudspeaker systems and creation of loudspeaker systems

## **Fourth Semester**

### **Core-5**

### **Linear Integrated Circuits (U20EL405)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	study and understand the basic working principle of linear IC
<b>CO2</b>	apply the op-amp and its characteristics to design circuits.
<b>CO3</b>	analyze the parameters in the applications of op-amp
<b>CO4</b>	evaluate different circuits using op-amp and gain a thorough knowledge in troubleshooting.
<b>CO5</b>	build circuits with different applications using op-amp IC



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## **Core-06                      Electronic Measurements & Network Analysis (U20EL406)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	study basic circuit concepts of measurements and networks in a systematic manner suitable for analysis and design.
<b>CO2</b>	apply knowledge of electronic instrumentation for measurement of electrical quantities and also apply the knowledge of basic circuit law and simplify the network using reduction technique
<b>CO3</b>	correlate the significance of different measuring instruments and oscilloscopes and also analyze the dc and ac circuits
<b>CO4</b>	infer and evaluate measuring instruments and electric circuits.
<b>CO5</b>	implement the circuit using basic circuit law and network theorems

## **Core - 07                      Electronic Appliances and Servicing (U20EL407)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	learn and understand the basic working principles of different household domestic appliances
<b>CO2</b>	acquire necessary skills and hands on experience in maintaining all the electronics appliances
<b>CO3</b>	apply the acquired skills in a productive manner
<b>CO4</b>	analyze the different inbuilt circuits and gain a thorough knowledge in troubleshooting the electronics appliances
<b>CO5</b>	transform themselves into a skilled technical person in the field of electronics and become socially responsible citizens



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## **Core Lab - 05**

### **LIC and PCB Simulation –Lab (U20EL4P5)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	learn and recognize the basic needs in constructing circuits using op-amp.
<b>CO2</b>	demonstrate power supplies, wave shaping circuits and wave generators with effective communication.
<b>CO3</b>	associate the op-amp characteristics and parameters to implement circuits with simulation software.
<b>CO4</b>	work in a team and evaluate the op-amp application circuits with the known concepts.
<b>CO5</b>	engage in lifelong learning and build circuits using the gained knowledge with op-amp IC.

## **Core Lab – 6**

### **Communication – Lab (U20EL4P6)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	Understanding the basic need for various types of modulation schemes.
<b>CO2</b>	Apply the learned skilled to identify the modulator and demodulator circuits.
<b>CO3</b>	Analyze the necessity of choosing specific modulation schemes for the application.
<b>CO4</b>	Analyze the concept behind PLL, AGC and bending losses in optical fibers and its implementation in modulation techniques.
<b>CO5</b>	Create an ability to choose appropriate modulation scheme depends on applications.



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## Core Elective – 2                      **Advanced Communication Systems (U20EL4E2A)**

CO No.	Course Outcome
CO1	get a clear idea about various diverse components of advanced communication concepts
CO2	understanding the mode of communications such as cable, satellite and terrestrial
CO3	analyze the purpose of satellite communication and cellular communications.
CO4	analyze the concepts of frequency reusing concepts and handoff techniques in cellular communications.
CO5	analyze the multiplexing concepts in satellite and cellular communications for the effective channel bandwidth utilization.

## Core Elective – 2                      **Nano Electronics (U20EL4E2B)**

CO No.	Course Outcome
CO1	get a clear idea about nano materials and its properties
CO2	understanding the various synthesis procedure of nano materials
CO3	apply and analyze with the properties and examines the principles & applications of nano materials in communication sector.
CO4	analyze with the properties and examines the principles & applications of nano materials in energy sector.
CO5	evaluate the properties and examines the principles & applications of nano materials in mems and devices.



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## **Core Elective – 2**

## **VLSI Technology (U20EL4E2C)**

<b>CO No.</b>	<b>Course Outcome</b>
<b>CO1</b>	understanding various VLSI design methodologies and fabrication techniques required for modern VLSI circuits.
<b>CO2</b>	apply basic concepts of MOSFETS to analyze the working of various MOS based invertors.
<b>CO3</b>	realize and implement various Boolean functions using CMOS invertors.
<b>CO4</b>	understand the working and design of different types of semiconductor memories to meet needs related to storage of large data in very small area.
<b>CO5</b>	create and designing electronic circuits of their own with HDL.