

BACHELOR OF SCIENCE (ELECTRONICS AND COMMUNICATION)

PROGRAMME OUTCOMES (PO)

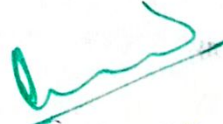
After completion of the programme, the graduates will be able to

- PO 1:** Recall and state fundamental laws, theorems and basic concepts of electronics.
- PO 2:** Understand and adopt the professional and ethical responsibilities of analog and digital communication systems.
- PO 3:** Apply the fundamentals to the development and modernization of the industries.
- PO 4:** Analyze the experimental trails by comparing them to the International standards.
- PO 5:** Design hardware, software and networking solutions for emerging smart devices and technologies.

PROGRAMME SPECIFIC OUTCOMES (PSO)

After completion of the programme, the graduates will be able to

- PSO1:** Comprehend the fundamental theoretical concepts and solve small numeric problems.
- PSO2:** Describe the theoretical concepts and communicate ideas effectively in a team during the development of analog as well as digital electronic products.
- PSO3:** Analyze the working principles and protocols of emerging smart devices.
- PSO4:** Provide efficient circuit design solutions which serve for industrial and social needs.
- PSO5:** Design and develop affordable hardware solutions for the existing complex instruments and devices.


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SEMESTER I - COURSE OUTCOMES (CO)
After completion of the course, the students will be able to


18UECM101	CORE I: PHYSICS OF SEMICONDUCTOR DEVICES
CO1	understand the concepts of current, voltage, stored energy, and power in circuits using Kirchoff's law and Ohms law.
CO2	acquire the basic concept of atomic theory and relates it to the materials.
CO3	distinguish between semiconductor materials and their properties.
CO4	analyze the construction, basic operation and characteristics of semiconductor diodes in practical applications.
CO5	compare the basic structure, operation and characteristics of BJT and power devices.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	M	H	H	H	H	M	L	L
CO2	L	L	L	H	H	M	M	M	L	L
CO3	H	M	H	H	L	L	M	L	L	M
CO4	M	L	M	M	L	L	M	M	M	M
CO5	M	L	L	M	H	L	M	M	M	H

H-High; M-Medium; L-Low

18UECM102	CORE II: DIGITAL ELECTRONICS
CO1	understand the logic levels, number systems and codes and convert the numbers from one system to another.
CO2	solve Boolean expressions comprehend the functions of the logic gates.
CO3	compute binary values and apply Boolean algebra for the design of combinational logic.
CO4	design sequential circuits for various storage, shifting and counting applications.
CO5	analyze the logic levels and apply them for the design of analog to digital conversion and vice versa.


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PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	M	M	M	H	M	M	L	L
CO2	L	M	H	H	H	M	H	M	L	L
CO3	M	M	H	H	H	L	H	M	M	L
CO4	M	M	M	H	H	L	M	H	H	M
CO5	L	L	M	H	H	L	L	M	H	H

H-High; M-Medium; L-Low

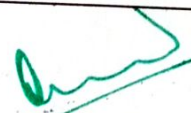
18UMAECA101	ALLIED I: ALGEBRA AND CALCULUS
CO1	calculate Eigen values and Rank of a matrix.
CO2	solve algebraic equations.
CO3	understand the variations in variables.
CO4	understand the difference between partial and total differentiation.
CO5	evaluate simple integrations.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	L	L	M	H	L	L	L	L
CO2	L	M	M	H	H	H	M	L	L	L
CO3	M	M	M	H	H	H	M	M	L	M
CO4	M	M	M	M	H	H	H	L	M	M
CO5	H	H	H	L	L	H	H	M	M	M

H-High; M-Medium; L-Low

18UECMP101	CORE PRACTICAL I: SEMICONDUCTOR DEVICES LAB
CO1	prove the laws and theorems of electricity.
CO2	understand the characteristics of diodes.
CO3	construct circuits based on energy conversion.
CO4	understand the function of transistor.
CO5	acquire the characteristics of the power devices.


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CO1	L	L	M	M	M	H	M	M	L	L
CO2	L	M	H	H	H	M	H	M	L	L
CO3	M	M	H	H	H	L	H	M	M	L
CO4	M	M	M	H	H	L	M	H	H	M
CO5	L	L	M	H	H	L	L	M	H	H

H-High; M-Medium; L-Low

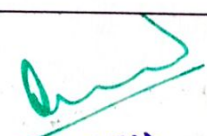
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CO1	L	H	L	L	M	H	L	L	L	L
CO2	L	M	M	H	H	H	M	L	L	L
CO3	M	M	M	H	H	H	M	M	L	M
CO4	M	M	M	M	H	H	H	L	M	M
CO5	H	H	H	L	L	H	H	M	M	M

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18UECMP102	CORE PRACTICAL II: DIGITAL ELECTRONICS LAB
CO1	perform the basic logic gate functions.
CO2	implement the functions of combinational circuits in various applications.
CO3	design various sequential logic circuits for real time applications.
CO4	develop flip flop and counter based circuits for timer applications.
CO5	design interfacing circuits using digital to analog conversion.

SEMESTER II - COURSE OUTCOMES (CO)
After completion of the course, the students will be able to

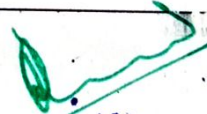
18UECM201	CORE III: ELECTRONIC CIRCUITS
CO1	understand the basics of electrical energy and practical implementation of electrical fundamentals.
CO2	solve design problems on rectifiers, filters and power supply circuits.
CO3	identify difference between small signal and large signal amplifiers.
CO4	design different types of oscillators for various computing as well as communication hardware's.
CO5	acquire the knowledge about Multivibrators and Wave shaping circuits.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	L	L	M	H	M	L	L	L
CO2	H	L	L	M	M	H	M	L	H	M
CO3	L	M	H	H	L	L	M	L	H	L
CO4	L	H	M	M	H	L	H	M	M	H
CO5	L	H	H	H	M	L	H	M	L	M

H-High; M-Medium; L-Low

18UECM202	CORE IV: PRINCIPLES OF COMMUNICATION SYSTEMS
CO1	acquire the basic concepts of electronic communication including electromagnetic spectrum and modulation.
CO2	comprehend the working principles of amplitude modulation fundamentals, sidebands and power consumption.
CO3	identify the constrains in implementing the single-sideband modulation, signals, power considerations and modulators and demodulators.
CO4	understand the fundamentals of FM and PM.
CO5	evaluate the detailed operation of communication Receivers such as superheterodyne Receivers, direct Conversion Receivers and software-defined radio.


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PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	L	M	H	M	L	L	M	M
CO2	L	L	M	M	H	L	L	L	M	M
CO3	M	M	L	L	L	L	M	L	L	L
CO4	H	H	M	M	L	H	M	M	M	L
CO5	M	M	M	M	H	L	M	M	M	H

H-High; M-Medium; L-Low

18UMAECMA201	ALLIED II: NUMERICAL METHODS
CO1	Find solution of algebraic and transcendental equations
CO2	Solve system of linear equations
CO3	Interpolate unknown values from known values
CO4	Know numerical methods of solving differential equations
CO5	Find the solution of the integral equations

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	M	M	H	M	M	L	L	L
CO2	L	M	M	M	M	H	M	M	L	M
CO3	M	M	M	H	M	H	M	M	L	M
CO4	H	M	M	M	H	H	H	M	M	H
CO5	H	H	M	M	L	H	H	M	M	H

H-High; M-Medium; L-Low

18UECMP201	CORE PRACTICAL III: ELECTRONIC CIRCUITS LAB
CO1	implement the concepts of network theorems using their equivalent circuits.
CO2	design and construct Half wave and Full wave rectifier.
CO3	construct a regulated power supply using integrated circuit.
CO4	understand the design process of amplifiers and oscillators.
CO5	generate required time delay for timers using a monostable multivibrator.

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18UECMP202	CORE PRACTICAL IV: COMMUNICATION LAB
CO1	perform basic operations such as generate various waveforms and measurements using CRO.
CO2	understand the AM Modulator circuit and measure modulation index.
CO3	identify the various stages and track signals in AM Radio Receiver.
CO4	design AM & FM Transmitter through Simulation.
CO5	implement a superheterodyne AM & FM Receiver using Simulation.

SEMESTER III - COURSE OUTCOMES (CO)
After completion of the course, the students will be able to

18UECM301	CORE V: MICROPROCESSOR AND INTERFACING
CO1	understand the evolution of processor and 8085 architectures, pin functions and bus timing.
CO2	compare the instruction formats and write the assembly language program with looping techniques.
CO3	compute and design time delay programs and counters.
CO4	investigate the 8255 interfacing with 8085 microprocessor and various other peripherals and programmable devices.
CO5	design and develop optical display interface, data control and converter applications

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	H	M	M	L	L	M	M	M
CO2	M	H	M	L	L	M	M	M	L	L
CO3	M	M	M	L	L	M	M	L	L	L
CO4	L	M	H	H	M	L	M	H	H	H
CO5	M	M	M	H	H	L	M	H	H	H

H-High; M-Medium; L-Low


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18UCAECA301	ALLIED III: PROGRAMMING IN C
CO1	Know the basic terminology of C Programming
CO2	Develop programs using control structures
CO3	Understand the Arrays and String handling functions
CO4	Understand the various categories of functions and structures
CO5	Develop the program using file concepts

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	M	M	H	H	M	H	M	H
CO2	L	L	M	M	H	M	M	H	M	H
CO3	L	M	M	M	H	M	M	H	M	H
CO4	M	M	H	M	H	M	M	H	M	H
CO5	H	H	H	M	H	M	M	H	M	H

H-High; M-Medium; L-Low

18UECMP301	CORE PRACTICAL V: MICROPROCESSOR AND INTERFACING LAB
CO1	write Assembly language Program for Arithmetic operations.
CO2	identify number sequence for array functions.
CO3	design programs for data conversion applications.
CO4	interface programmable peripherals with help of look up tables.
CO5	manipulate and develop the message display for optical devices.

18UCAECAP301	ALLIED PRACTICAL I: PROGRAMMING IN C
CO1	Develop simple programs
CO2	Implement various control structures
CO3	Develop program using Arrays
CO4	Implement Function , Structure and Union concepts
CO5	Develop program using files

18UECSBP301	SBC PRACTICAL I: CIRCUIT SIMULATION LAB
CO1	perform different aspects of PCB design.
CO2	create simple circuits using ICs.
CO3	design power circuits for various applications.
CO4	analyze different waveform in designing of AC-DC converter.
CO5	develop power control circuits.


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18UECAC301	ADD ON COURSE I: PCB DESIGN
CO1	analyze the fundamentals on all the basics of PCB designing.
CO2	perform the chemical and mechanical processes by using positive/negative masks.
CO3	gain the knowledge of art work preparation.
CO4	understand the etching process for final PCBs.
CO5	design the interconnection technique for multilayer boards.

SEMESTER IV - COURSE OUTCOMES (CO)
After completion of the course, the students will be able to

18UECM401	CORE VI: ICs AND APPLICATIONS
CO1	acquire qualitative knowledge about the fabrication process of integrated circuit.
CO2	utilize operational amplifier as Adder, Subtractor, Integrator and Differentiator.
CO3	analyze and design basic op-amp circuits, non-linear circuits, comparator, signal generators, and oscillator.
CO4	design circuits for various PLL applications and timers.
CO5	identify the principles of processing, manufacturing and characterization of Nanomaterials.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	H	M	M	L	L	H	M	L
CO2	M	H	L	M	H	M	H	L	M	L
CO3	M	H	M	L	M	M	H	M	L	M
CO4	H	H	M	M	H	H	H	M	M	L
CO5	M	M	H	H	H	L	L	H	H	H

H-High; M-Medium; L-Low

18UCAECA401	ALLIED IV: PROGRAMMING IN JAVA
CO1	Understand the basic terminology of Java Programming
CO2	Develop programs using control structures
CO3	Able to understand the interfaces and packages
CO4	Understand the multithreaded programming and exceptions
CO5	Develop program using Applets and files


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MAPPING


PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	L	H	M	L	L	M	L	M	L
CO2	M	H	L	M	L	M	H	M	H	H
CO3	M	H	M	L	M	M	M	M	M	H
CO4	H	H	M	M	L	M	M	M	M	H
CO5	L	L	H	H	H	M	H	M	H	H

H-High; M-Medium; L-Low

18UECMP401	CORE PRACTICAL VI: ICs AND APPLICATION LAB
CO1	design operational amplifier based circuits.
CO2	design timer based circuits.
CO3	develop waveform generation circuits.

18UCAECAP401	ALLIED PRACTICAL II: PROGRAMING IN JAVA
CO1	Able to build programs using control statements and arrays
CO2	Develop programs using inheritance and overloading
CO3	Able to build programs using interfaces and packages
CO4	Develop programs to handle exceptions
CO5	Able to build program using Applets and files

18UECSB401	SBC II: CONSUMER ELECTRONICS
CO1	understand the principle of various electronic audio devices
CO2	understand the characteristic of the remote control system.
CO3	identify the electronic gadgets for consumer applications.
CO4	demonstrate the impact of electronics in domestic applications.
CO5	apply the concepts in automobile applications.


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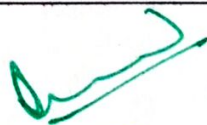
PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	L	M	L	M	M	L	M	L
CO2	M	H	M	H	H	H	H	L	M	L
CO3	M	M	M	M	H	H	M	L	M	L
CO4	M	M	M	M	H	L	M	M	M	M
CO5	M	H	M	H	H	H	H	M	M	L

H-High; M-Medium; L-Low

18UECAC401	ADD ON COURSE II: COMPUTER HARDWARE INSTALLATION AND SERVICING
CO1	understand the evolution of personal computer.
CO2	create the computer hardware knowledge for inside PC.
CO3	design for hard disk drive controller.
CO4	investigate the display devices.
CO5	diagnosis and troubleshooting the personal computer hardware.

18UECAL401	ADVANCED LEARNERS COURSE I: DIGITAL SIGNAL AND IMAGE PROCESSING
CO1	understand the basics and fundamentals of digital image processing, digitization, sampling and quantization.
CO2	apply the techniques of smoothing, sharpening and enhancement on digital images.
CO3	understand the restoration concepts and filtering techniques.
CO4	learn the basics of segmentation and features extraction methods.
CO5	learn the basics of compression and recognition methods.

18UECAL402	ADVANCED LEARNERS COURSE II: ARTIFICIAL INTELLIGENCE
CO1	describe the fundamentals of artificial intelligence
CO2	analyze various neural network based soft computing techniques for complex problems.
CO3	differentiate between supervised, unsupervised, semi-supervised machine learning approaches.
CO4	identify and Apply fuzzy logic technique for solving specific problems.
CO5	analyze and choose the appropriate machine learning approach for the various types of applications


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SEMESTER V - COURSE OUTCOMES (CO)
After completion of the course, the students will be able to


18UECM501	CORE VII: COMPUTER NETWORKS
CO1	comprehend the fundamental concepts of computer networking.
CO2	classify the types of signals and conversions.
CO3	state the principles of the connecting media and switching networks.
CO4	describe the functions of data link layer and explain the protocols.
CO5	analyze the architecture and role of the layers.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	M	M	L	M	H	M	M
CO2	L	L	M	M	H	L	L	M	M	H
CO3	M	M	H	H	L	M	M	H	H	M
CO4	M	M	M	H	H	L	M	M	H	H
CO5	H	M	M	H	L	H	M	M	H	M

H-High; M-Medium; L-Low

18UECM502	CORE VIII: EMBEDDED SYSTEMS
CO1	understand the basic features, functions, memory and internal architecture of 8051 microcontroller.
CO2	apply knowledge and demonstrate programming proficiency using the various addressing modes and instructions set of the microcontroller.
CO3	analyze port structure, timer/counter and operation of serial communication for real time practical applications.
CO4	identify and understand the function of different blocks of PIC microcontroller.
CO5	develop programs using special function registers and interrupt.


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CO1	H	M	M	L	L	H	M	L	L	L
CO2	H	H	H	M	L	H	H	L	M	L
CO3	M	H	L	M	M	M	H	M	M	M
CO4	H	M	L	M	M	H	M	H	M	M
CO5	M	M	L	H	H	M	M	M	H	H

H-High; M-Medium; L-Low

18UECM503	CORE IX: ARDUINO AND INTERNET OF THINGS
CO1	understand the structure of arduino boards and programming concepts.
CO2	describe the function of arduino UNO and interfacing concepts.
CO3	understand the basic principles, requirements, functions and system architecture of IoT.
CO4	prototype embedded devices for IoT and M2M , embedded platforms and design software for IoT applications.
CO5	analyze the functioning of IoT applications in smart premises, connected car, environment monitoring and agriculture through quantitative case studies.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	M	M	L	M	H	M	M
CO2	L	L	M	M	H	L	L	M	M	H
CO3	M	M	H	H	L	M	M	H	H	M
CO4	M	M	H	H	H	L	M	M	H	H
CO5	H	M	M	H	L	H	M	M	H	M

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18UECMP501	CORE PRACTICAL VII: EMBEDDED SYSTEMS LAB
CO1	understand assembly language program for arithmetic operations.
CO2	identify the different ways of interfacing memory and I/O with microcontrollers.
CO3	develop programs for interfacing with real world devices.

18UECMP502	CORE PRACTICAL VIII: INTERNET OF THINGS LAB
CO1	understand the basic programming with Arduino.
CO2	design different sensors for automation.
CO3	develop interfacing to real world devices.

18UECSB501	SBC III: ELECTRONIC MEDIA
CO1	understand the concepts of sound and audio.
CO2	familiarize with the concepts of image and graphics
CO3	analyze the representation and modes of the video signal.
CO4	understand the principle and types of the storage media.
CO5	apply the techniques in real world applications of electronic media.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	M	M	L	M	H	M	M
CO2	L	L	M	M	H	L	L	M	M	H
CO3	M	M	H	H	M	M	M	H	H	M
CO4	M	M	M	H	H	H	M	L	H	H
CO5	H	M	M	H	M	H	M	M	H	M

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18UECEL501	ELECTIVE I: SENSORS AND TRANSDUCERS
CO1	state the concepts of common methods of measurement and characteristics.
CO2	comprehent the principle of resistive transducers.
CO3	understand the principle of various capacitive and inductive transducers.
CO4	analyze the working principle and application of different sensors.
CO5	describe about the microsystem fabrication process.

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PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	M	L	M	L	H	L	L	M
CO2	L	L	M	M	H	L	L	L	M	H
CO3	H	H	M	M	L	H	H	M	M	M
CO4	H	M	H	H	H	H	M	H	H	H
CO5	M	H	H	H	H	M	H	H	H	M

H-High; M-Medium; L-Low

18UECEL502	ELECTIVE II: MICROWAVE AND FIBER OPTIC COMMUNICATION
CO1	understand the theory of microwave and fiber optic communication.
CO2	state the working of microwave amplifiers, oscillators and devices.
CO3	design and analyze the microwave amplifiers, oscillator and devices.
CO4	understand the basics of Radar technology.
CO5	describe the different characteristics of optical fiber.


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MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	M	M	L	M	H	M	L
CO2	L	L	M	M	H	L	L	M	M	H
CO3	H	L	H	H	M	H	M	H	H	M
CO4	H	H	L	M	H	M	H	M	M	H
CO5	H	M	M	L	M	H	M	M	H	M

H-High; M-Medium; L-Low

18UECAL501	ADVANCED LEARNERS COURSE III: ENERGY AUDITING
CO1	acquire the knowledge on fundamentals of economic operation of an electrical system
CO2	conceptual knowledge of the technology, economics and regulation related issues associated with energy conservation and energy auditing
CO3	calculate the efficiency of various thermal utilities
CO4	understand the electricity load, power, loss and efficiency
CO5	analyze the viability of house-hold and agro industry products

18UECAL502	ADVANCED LEARNERS COURSE IV: ELECTRONIC APPLICATIONS IN AGRICULTURE
CO1	understand the technologies available for automation.
CO2	design conventional methods as automated system to be more efficient.
CO3	understand the IT applications in environmental control Systems.
CO4	understand precision farming, agricultural systems management and weather prediction models.
CO5	understand agricultural marketing, challenges and prospects for improving agricultural marketing system.


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SEMESTER VI – COURSE OUTCOMES (CO)
After completion of the course, the students will be able to

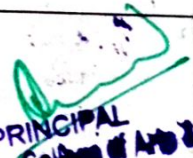
18UECM601	CORE X: MOBILE AND CELLULAR COMMUNICATION
CO1	recall and describe the challenges in Cellular communication.
CO2	describe the mobile communication architecture and standards.
CO3	explore the new mobile technologies.
CO4	design and analyze mobile routing protocols.
CO5	survey the progress of new mobile technologies.

MAPPING

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CO1	L	L	M	M	M	L	L	M	L	M
CO2	M	L	M	M	H	M	L	M	M	H
CO3	L	M	M	M	H	L	M	H	M	M
CO4	M	H	M	H	H	M	H	M	H	H
CO5	H	M	H	H	H	H	M	H	H	M

H-High; M-Medium; L-Low

18UECM602	CORE XI: VLSI DESIGN AND VHDL
CO1	understand the operation and fabrication process of MOS transistor.
CO2	study the concept of MOS circuit process layout and rules.
CO3	understand the basic concepts in VHDL.
CO4	state the basic terminologies used in VHDL.
CO5	analyze the various modeling concepts in VHDL.


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MAPPING

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CO1	L	H	L	M	H	L	H	L	M	M
CO2	L	L	M	M	H	L	L	M	M	H
CO3	M	M	H	M	H	L	M	H	M	H
CO4	M	H	L	H	M	M	M	H	H	H
CO5	H	H	H	H	L	M	H	H	H	H

H-High; M-Medium; L-Low

18UECM603	CORE XII: BIOMEDICAL INSTRUMENTATION
CO1	understand the basic physiology of the human and the types of electrodes.
CO2	identify various biopotential and their specifications in terms of amplitude and frequency.
CO3	analyze the principle and working of the various physiological assist devices.
CO4	describe the operation theatre equipments and their working principles.
CO5	acquire detailed information about the imaging systems and instruments.

MAPPING

PSO CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	M	M	M	L	L	M	L	M
CO2	L	L	M	M	M	L	L	M	M	M
CO3	M	M	L	L	H	M	M	M	L	H
CO4	H	M	H	H	M	H	M	H	H	M
CO5	M	H	H	L	H	M	H	H	H	H

H-High; M-Medium; L-Low

18UECMP601	CORE PRACTICAL IX: VHDL PROGRAMMING AND SIMULATION LAB
CO1	understanding the synthesis and simulation process of codes.
CO2	analyze, design and simulate combinational and sequential logic circuits.
CO3	design and develop applications using simulation packages.

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18UECEL601	ELECTIVE III: INTELLIGENT INSTRUMENTATION
CO1	demonstrate the working of Labview.
CO2	classify the various types of structures used in LabView.
CO3	describe the use of LabView for signal processing, image processing etc.
CO4	analyze and design different type of program based on data acquisition.
CO5	explore the concept of advanced control schemes used in process control.

MAPPING

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CO1	L	L	M	L	M	L	L	M	L	L
CO2	L	L	M	M	M	L	L	M	M	M
CO3	L	M	L	M	H	L	M	L	M	H
CO4	M	M	H	H	H	M	H	H	H	H
CO5	M	H	H	H	L	M	H	H	H	H

H-High; M-Medium; L-Low

18UECEL602	ELECTIVE IV: ROBOTICS
CO1	comprehend the fundamentals of robotics and its components.
CO2	illustrate the control and coordinates of robot.
CO3	elucidate the need of different sensors and operations.
CO4	analyze the uses of programming languages and installing a robot.
CO5	demonstrate the application in real world applications.


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CO1	L	L	M	L	H	L	L	M	L	L
CO2	L	L	M	M	M	L	L	M	M	M
CO3	L	M	L	M	H	L	M	L	M	M
CO4	M	M	M	H	M	M	M	H	H	H
CO5	M	M	H	H	M	M	H	H	H	H


H-High; M-Medium; L-Low

18UECSB601	SBC IV: PLC & SCADA
CO1	understand the theory of Programmable Logic Controller.
CO2	understand the basics of PLC programming.
CO3	substantiate the PLC Instructions.
CO4	understand the theoretical concepts of SCADA.
CO5	analyze the SCADA sample applications.

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CO1	L	M	H	M	M	L	M	H	M	M
CO2	L	L	M	M	H	L	L	M	M	H
CO3	M	M	H	H	H	L	M	H	H	M
CO4	M	M	M	H	H	M	M	M	H	H
CO5	M	M	L	H	M	M	M	M	H	M

H-High; M-Medium; L-Low


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NMEC subjects for other department students in THIRD & FOURTH semester

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

18UECNM301	NMEC I: COMPUTER SYSTEMS AND MAINTENANCE
CO1	identify the components of the computer.
CO2	gain the knowledge of the memory devices.
CO3	troubleshoot the problems in the IO peripherals.
CO4	know the procedures for installing/ configuring device drivers and required software.
CO5	understand the problems of the PC and troubleshooting techniques.

18UECNM401	NMEC II: ELECTRONIC GADGETS AND MAINTENANCE
CO1	understand the basics and working of different audio devices.
CO2	identify the need of preventive maintenance for home appliances.
CO3	trouble shoots the problems in the office appliances.
CO4	understand the basics of remote control system.
CO5	study the electronic gadgets through the automobile applications.

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