ACADEMIC YEAR 2020-2021

DEPARTMENT OF ELECTRONICS &COMMUNICATION

S1 ECE (2020-2024 Batch)- KTU 2019 Scheme

SL NO	COURSE CODE	SUBJECT NAME	STAFF HANDLED
1	MAT101	Linear Algebra And Calculus	Ambilimol V P
2	PHT 100	Engineering Physics A	Sreeti Gangadharan
3	EST 110	Engineering Graphics	Sasi K S
4	EST 120	Basics Of Civil And Mechanical Engineering	John P George
5	HUN 101	Life Skills	Renju R
6	PHL 120	Engineering Physics Lab	Sasi B
7	ESL 120	Civil And Mechanicalworkshop	Neeraja Chandrasekhar

S3 ECE (2019-2023 Batch)

Sl no	Course code	Subject name	Staff handled
1	MAT201	Partial Differential Equation And Complex Analysis	Ampady V K
2	ECT201	Solid State Devices	Prajeesh R
3	ECT203	Logic Circuit Design	Anup Vasavan
4	ECT205	Network Theory	Samitha T
5	EST200	Design And Engineering	Chinchu S
6	MCN201	Sustainable Engineering	Hema H
7	ECL201	Scientific Computing Lab	Soubhagya Sasikumar
8	ECL203	Logic Design Lab	Anup Vasavan

S5 ECE (2018 Batch)

Sl no	Course code	Subject name	Staff handled
1	EC301	Digital Signal Processing	Ms.Samitha T
2	EC303	Applied Electromagnetic Theory	Mr. Anup Vasavan
3	EC305	Microprocessors & Microcontrollers	Mr.Ratheesh
4	EC307	Power Electronics & Instrumentation	Mr. Amjith S
5	EC365	Biomedical Engineering	Mr.Sonysethukumar
6	HS300	Principals Of Management	JOHN P GEORGE
7	EC341`	Design Project	Malu U

8	EC333	Digital Signal Processing Lab	Chinchu S
9	EC335	Power Electronics & Instrumentation Lab	PRAJEESH R

S7 ECE (2017 Batch)

Sl no	Course code	Subject name	Staff handled
1	EC401	Information Theory & Coding	Ms. Madhavi Vikram
2	EC403	Microwave & Radar Engineering	Ms. Malu U
3	EC405	Optical Communication	Ms.Soubhagya Sasikumar
4	EC407	Computer Communication	Ponnambili S
5	EC409	Control Systems	Ms.Arathi Babu
6	EC465	Mems	CHINCHU S
7	EC451	Seminar & Project Preliminary	Ponnambili S
8	EC431	Communication Systems Lab(Optical & Microwave)	Ms. Sony Sethukumuar

EVEN SEMESTER

S2 ECE (2020-2024 Batch)- KTU 2019 Scheme

Sl no	Course code	Subject name	Staff handled
1	CYT 100	Engineering Chemistry	Renju R
2	EST 100	Engineering Mechanics	Reshma S
3	EST 130	Basics Of Electrical And Electronics Engineering	Prajeesh R
4	CYL 120	Engineering Chemistry Lab	Renju R
5	ESL 130	Electrical And Electronics Workshop	Remya
6	MAT102	Vector Calculus, Differential Equation And Transforms	Ambilimol V P
7	HUN10	Professional Communication	Sreeti Gangadharan
8	EST102	Programming In C	Dhanunath R

S4 ECE (2019-2023 Batch)

Sl no	Course code	Subject name	Staff Handled
1	MAT204	Probability, Random Process And Numerical Methods	Lijimole S
2	ECT202	Analog Circuits	Anup Vasavan
3	ECT204	Signals And Systems	Prajeesh R
4	ECT206	Computer Architecture And Microcontrollers	Arathi Babu
5	HUT200	Professional Ethics	Ponnambili S

6	MCN202	Constitution Of India	Lekshmi M G
7	ECL202	Analog Circuits And Simulation Lab	Anup Vasavan
8	ECL204	Microcontroller Lab	Samitha T

S6 ECE (2017-2021 Batch)

Sl no	Course code	Subject name	Staff handled
1	EC302	Digital Communication	Mr.Sony Sethukumar
2	EC304	Vlsi	Ms.Malu
3	EC306	Antenna & Wave Propagation	Arathi Babu
4	EC308	Embedded Systems	Ms.Soubhagya Sasikumar
5	EC312	Object Oriented Programming	Chippy T
6	EC370	Digital Image Processing	Ms.Samitha
7	EC332	Communication Engg Lab (Analog & Digital)	Ms.Prajeesh R
8	EC334	Microcontroller Lab	Malu U
9	EC352	Comprehensive Exam	Malu U

S8 ECE (2017-2021 Batch)

Sl no	Course code	Subject name	Staff handled
1	EC402	Nano Electronics	REMYA K
2	EC404	Advanced Communication Systems	Mr.Anup
3	EC464	Low Power Vlsi Design	Ms.Malu U
4	EC492	Project	PONNAMBILI S
5	CE482	Environmental Impact Assessment	ARATHI BABU

S1 ECE (2020-2024 Batch)- KTU 2019 Scheme

SL NO	COURSE CODE	SUBJECT NAME	STAFF HANDLED
1	MAT101	Linear Algebra And Calculus	AMBILIMOL V P
2	PHT 100	Engineering Physics A	SREETI GANGADHARAN
3	EST 110	Engineering Graphics	Sasi K S
4	EST 120	Basics Of Civil And Mechanical Engineering	John P George
5	HUN 101	Life Skills	RENJU R
6	PHL 120	Engineering Physics Lab	Sasi B
7	ESL 120	Civil And Mechanicalworkshop	Neeraja Chandrasekhar

COURSE OBJECTIVES AND COURSE OUTCOME FOR

MA 101: LINEAR ALGEBRA AND CALCULUS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes On completion of course the students will be able to:
1	To give the definition of an infinite series and explain what is meant by the sequence of partial sums. Relate the convergence or divergence of the series to the sequence of partial sums.	Evaluate the limit of a sequence of numbers (infinite series) and determine whether the series converges.
2	Compute partial derivatives of functions of several variables. Apply the theorem on mixed partial derivatives.	Understand the meaning of partial derivatives and calculate partial derivatives.
3	Use concepts of calculus to the model real-world problems	Compute dot product, cross product, length of vectors. Compute partial derivatives, derivatives of vector-valued functions, gradient functions.
4	Evaluate volumes of bounded solids and areas of bounded regions by using the ideas of double and triple integrals.	To change a double integral to polar co ordinate. Compute (relatively simple) triple integrals
5	Apply the concept of line integral to work and circulation. Know the definition and properties of conservative vector fields and their relationship to gradient fields.	Determine if a vector field is conservative and find a potential function if conservative. Evaluate line integrals in the plane and in space, including line integrals of vector fields.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

PHT 100: ENGINEERING PHYSICS A

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To acquire knowledge about desalination of brackish water and treatment of municipal water.	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
2	To gain the knowledge of conducting polymers, bio-degradable polymers and fibre reinforced plastics.	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution. Design economically and new methods of synthesis nano materials.
	To learn significance of green chemistry and green synthesis.	Have the knowledge of converting solar energy into most needy electrical.
4	To understand mechanism of corrosion and preventive methods.	Apply their knowledge for protection of different metals from corrosion. To prevents the monuments from getting corroded.
5	To have an idea and knowledge about the Chemistry of Fuels.	Recent trends in electrochemical energy storage devices.
6	To study different types of spectroscopy.	Learn how to use different spectroscopy techniques for analysis purpose of simple molecules.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

EST110: ENGINEERING GRAPHICS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To apply the principles of mechanics to practical engineering problems.	Understand the fundamental concepts of mechanics.
2	To identify appropriate structural system for studying a given problem and isolate it from its environment.	Students would be able to apply and demonstrate the concepts of resultant and equilibrium of force system.
3	To develop simple mathematical model for engineering problems and carry out static analysis.	Students would be able to determine the properties of planes and solids.
4	To develop simple mathematical model for engineering problems and carry out static analysis.	Understand the concepts of moment of inertia.
5		Students would be able to apply fundamental concepts of dynamics to practical problems.
6		Understand the basic elements of vibration.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

EST 120: BASICS OF CIVIL AND MECHANICAL ENGINEERING

Sl No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart a basic knowledge in Electrical Engineering with an understanding of fundamental concepts.	Gain preliminary knowledge in basic concepts of Electrical Engineering.
2	To impart the basic knowledge about the Electric and Magnetic circuits.	Discuss the working of various dc and ac machines
3	To inculcate the understanding about the AC fundamentals.	To predict the behaviour of any electrical and magnetic circuits.
4	To understand the working of various Electrical Machines.	To identify the type of electrical machine used for that particular application.
5		To wire any circuit depending upon the requirement.
6		Understand working principle of various analogue electrical measuring instruments.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

HUN101: LIFE SKILLS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To have an increased awareness among students on issues in areas of sustainability.	Able to appreciate and explain the different types of environmental pollution problems and their sustainable solutions
2	To have an insight into global environmental issues.	To be aware of problem related to global environmental issues
3	To establish a clear understanding of the role and impact of various aspects of engineering and engineering decisions on environmental, societal, and economic problems.	Able to apply the concepts of sustainability in their respective area of specialization
4	To understand the role of engineering in achieving sustainable world	To understand the need of waste disposal and management

COURSE OBJECTIVES AND COURSE OUTCOME FOR

PHL 120: ENGINEERING PHYSICS LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To inculcate the essentials of civil engineering field to the students of all branches	The students will be able to illustrate the fundamental aspects of civil engineering
2	To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.	The students should able to plan a building
3		Students will be able to explain about surveying for making horizontal and vertical measurements.
4	.	They will able to illustrate the uses of various building materials and construction of different components of a building.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

ESL 120: CIVL AND MECHANICAL WORKSHOP

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To make students familiarize with the practical aspects of volumetric analysis of water samples ad determine the parameters like alkalinity, chlorides and hardness.	To equip the students to apply the knowledge of Chemistry and take up Chemistry related topics as parts of their project works during higher semester of the course.
2	To improve the knowledge of different types of titrations used in volumetric analysis	To impart sound knowledge in the different fields of theoretical chemistry so as to apply it to the problems in engineering field. (b) To develop analytical capabilities of students so that they can characterize, transform and use materials in engineering and apply knowledge gained in solving related engineering problems
3	To make students develop in terms of practical skills required for analytical projects.	To develop abilities and skills that are relevant to the study and practice of Chemistry.
4	To study flash and fire point	To familiarize the students with different application oriented topics like new generation engineering material different instrumental methods etc.
5		To enable the students to acquire the knowledge in the concepts of chemistry for engineering applications.

S3 ECE (2019-2023 Batch)

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1	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	AMPADY V K
2	ECT201	Solid State Devices	Prajeesh R
3	ECT203	Logic Circuit Design	Anup Vasavan
4	ECT205	Network Theory	Samitha T
5	EST200	Design And Engineering	Chinchu S
6	MCN201	Sustainable Engineering	Hema H
7	ECL201	Scientific Computing Lab	Soubhagya Sasikumar
8	ECL203	Logic Design Lab	Anup Vasavan

MAT201: LINEAR ALGEBRA & COMPLEX ANALYSIS COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course introduces basic ideas of partial differential equations which are widely used in the modelling and analysis of a wide range of physical phenomena	Understand the concept and the solution of partial differential equation.
2	To understand the basic theory of functions of a complex variable, residue integration and conformal transformation.	Analyse and solve one dimensional wave equation and heat equation
3		Understand complex functions, its continuity differentiability with the use of CauchyRiemann equations.
4		Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function
5		Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

ECT201   SOLID STATE DEVICES

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course aims to understand the physics and working of solid state devices	Apply Fermi-Dirac Distribution function and Compute carrier concentration at equilibrium and the parameters associated with generation, recombination and transport mechanism
2		Explain drift and diffusion currents in extrinsic semiconductors and Compute current density due to these effects.
		Define the current components and derive the current equation in a pn junction diode and bipolar junction transistor.
4		Explain the basic MOS physics and derive the expressions for drain current in linear and saturation regions.
5		Discuss scaling of MOSFETs and short channel effects

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

LOGIC CIRCUIT DESIGN ECT 203

Sl.No.	Course Outcomes	Subject Learning Outcomes Or Course Outcomes
		On Completion Of Course Student Will Be Able To:
1	This course aims to impart the basic knowledge of logic circuits and enable students to apply it to design a digital system.	Explain the elements of digital system abstractions such as digital representations of information, digital logic and Boolean algebra
2		Create an implementation of a combinational logic function described by a truth table using and/or/inv gates/ muxes
3		Compare different types of logic families with respect to performance and efficiency
4		Design a sequential logic circuit using the basic building blocks like flip-flops
5		Design and analyze combinational and sequential logic circuits through gate level Verilog models.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR
ECT205: NETWORK THEORY

Sl No.	Course Objectives	Course Outcomes
1	This course aims to analyze the linear time invariant electronic circuits.	Apply Mesh / Node analysis or Network Theorems to obtain steady state response of the linear time invariant networks.
2		Apply Laplace Transforms to determine the transient behaviour of RLC networks
3		Apply Network functions and Network Parameters to analyse the single port and two port networks.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

MCN201   SUSTAINABLE ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Objective of this course is to inculcate in students an awareness of environmental issues and the global initiatives towards attaining sustainability.	Understand the relevance and the concept of sustainability and the global initiatives in this direction
2	The student should realize the potential of technology in bringing in sustainable practices.	Explain the different types of environmental pollution problems and their sustainable solutions
3		Discuss the environmental regulations and standards
4		Outline the concepts related to conventional and non-conventional energy
5		Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles

EST 200: DESIGN AND ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	The purpose of this course is to i) introduce the undergraduate engineering students the fundamental principles of design engineering,	Explain the different concepts and principles involved in design engineering.
2	To make them understand the steps involved in the design process	Apply design thinking while learning and practicing engineering.
3	To familiarize them with the basic tools used and approaches in design.	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

ECL 201   SCIENTIFIC COMPUTING LABORATORY

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
		Describe the needs and requirements of scientific computing and to familiarize one programming language for scientific computing and data visualization.
		Approximate an array/matrix with matrix decomposition.
		Implement numerical integration and differentiation.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

ECL 203   LOGIC DESIGN LAB

Sl no	Course Objective	Course Outcome
		On completion of course the student will be able to
1	This course aims to (i) familiarize students with the Digital Logic Design through the implementation of Logic Circuits using ICs of basic logic gates(ii) familiarize students with the HDL based Digital Design Flow.	Design and demonstrate the functioning of various combinational and sequential circuits using ICs
		Apply an industry compatible hardware description language to implement digital circuits
		Implement digital circuits on FPGA boards and connect external hardware to the boards
		Function effectively as an individual and in a team to accomplish the given task

EC301 DIGITAL SIGNAL PROCESSING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide an understanding of the principles, algorithms and applications of DSP	the principle of digital signal processing and applications.
2	To study the design techniques for digital filters	the utilization of DSP to electronics engineering
3	To give an understanding of Multi-rate Signal Processing and its applications	
4	To introduce the architecture of DSP processors	

EC303 :APLLIED ELECTROMAGNETIC THEORY

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce basic mathematical concepts related to electromagnetic vector fields.	To develop a solid foundation and a fresh perspective in the analysis and application of electromagnetic fields.
2	To impart knowledge on the basic concepts of electric and magnetic fields	To analyse the propagation of electromagnetic waves in different media.
3	To develop a solid foundation in the analysis and application of electromagnetic fields, Maxwell's equations and Poynting theorem	To analyze the characteristics of transmission lines.
4	To become familiar with propagation of signal through transmission lines and waveguides.	To solve the different transmission line problems using Smith chart

EC305 : MICROPROCESSOR &MICROCONTROLLER

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand fundamental operating concepts of microprocessors and microcontrollers	Distinguish various types of processor architectures.
2	To communicate with various devices using controller.	Describe architectures, memory organization of 8085 microprocessor and 8051.
3	To design a microcontroller based system with the help of the interfacing devices.	Develop programming skills in assembly for interfacing peripheral devices with 8051
4	To program the controller to make various peripherals work for specified application	

EC307 POWER ELECTRONICS & INSTRUMENTATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide an insight on the concepts of Power Electronics and Electronic instruments	To understand the concepts of Power Electronics and the various applications
2	To study the applications of Power electronics such as Switched mode regulators and inverters.	To get an insight on various electronic instruments, their configuration and measurements using them.
3	To develop understanding of the concept of Transducers and Digital instruments.	To understand the principle of operation of Transducers

EC365 BIOMEDICAL INSTRUMENTATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce student to basic biomedical engineering technology	To understand the concepts of Power Electronics and the various applications.
2	To understand the anatomy & physiology of major systems of the body in designing equipment for medical treatments.	To get an insight on various electronic instruments, their configuration and measurements using them.
3	To impart knowledge about the principle and working of different types of bio-medical electronic equipment/devices.	To understand the principle of operation of Transducers

EC333 DIGITAL SIGNAL PROCESSING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To enable the students to explore the concepts of design, simulation and implementation of various systems using MATLAB/SciLab/OCTAVE and DSP kit.	Design, simulate and realize various systems related to DSP.

EC335 POWER ELECTRONICS & INSTRUMENTATION LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To design and implement basic power electronic circuits	Design and demonstrate basic power electronic circuits
2	To study the working of transducers	Use transducers for application.
3	To train the usage of Digital Instruments	Function effectively as an individual and in a team to accomplish the given task.

S7 ECE

EC401 INFORMATION THEORY & CODING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the concept of information	Apply the knowledge of Shannon's source coding theorem and Channel coding theorem for designing an efficient and error free communication link.
2	To understand the limits of error free representation of information signals and the transmission of such signals over a noisy channel	Analyze various coding schemes
3	To design and analyze data compression techniques with varying efficiencies as per requirements	Design an optimum decoder for various coding schemes used.
4	To understand the concept of various theorems proposed by Shannon for efficient data compression and reliable transmission	
5	To give idea on different coding techniques for reliable data transmission	

EC 403 MICROWAVE & RADAR ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the various microwave sources, their principle of operation and measurement of various parameters	The students will be able to understand the basics of microwave engineering and radar systems.
2	To study the various microwave hybrid circuits and formulate their S matrices.	
3	To understand the basic concepts, types, working of radar and introduce to radar transmitters and receivers.	

EC 405 OPTICAL COMMUNICATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the concepts of light transmission through optical fibers, optical sources and detectors.	Know the working of optical source and detectors.
2	To compare the performance of various optical transmission schemes.	Compare the performance of various optical modulation schemes.
3	To impart the working of optical components and the principle of operation of optical amplifiers.	Apply the knowledge of optical amplifiers in the design of optical link.
4	To give idea on WDM technique	Analyse the performance of optical amplifiers.

EC 407 COMPUTER COMMUNICATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To give the basic concepts of computer network and working of layers, protocols and interfaces in a computer network.	Different types of network topologies and protocols.
2	To introduce the fundamental techniques used in implementing secure network communications and give them an understanding of common threats and its defences.	The layers of the OSI model and TCP/IP with their functions.
3		The concept of subnetting and routing mechanisms.
4		The basic protocols of computer networks, and how they can be used to assist in network design and implementation.

EC 409 CONTROL SYSTEMS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the elements of control system and its modelling	Represent mathematically a systems and deriving their transfer function model.
2	To introduce methods for analyzing the time response, the frequency response and the stability of systems.	Analyse the time response and frequency response of the systems for any input
3	To design control systems with compensating techniques.	Find the stability of system
4	To introduce the state variable analysis method.	Design a control system with suitable compensation techniques
5	To introduce basic concepts of digital control systems	Analyse a digital control system.

EC 465 MEMS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the operation of major classes of MEMS devices/systems	Understand the working principles of micro sensors and actuators
2	To give the fundamentals of standard micro fabrication techniques and processes	Understand the application of scaling laws in the design of micro systems
3	To understand the unique demands, environments and applications of MEMS devices	Understand the typical materials used for fabrication of micro systems
4		Understand the principles of standard micro fabrication techniques
5		Appreciate the challenges in the design and fabrication of Micro systems

EC431 COMMUNICATION SYSTEMS LAB(OPTICAL & MICROWAVE)

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide practical experience in design, testing, and analysis of few electronic devices and circuits used for microwave and optical communication engineering.	Measurement of E-plane and H-plane characteristics
2		Study of Vector Network Analyser
3		Study of losses in Optical fiber

EVEN SEMESTER

S2 ECE (2020-2024 Batch)- KTU 2019 Scheme

Sl no	Course code	Subject name	Staff handled
1	CYT 100	Engineering Chemistry	Renju R
2	EST 100	Engineering Mechanics	RESHMA S
3	EST 130	Basics Of Electrical And Electronics Engineering	Prajeesh R
4	CYL 120	Engineering Chemistry lab	Renju R
5	ESL 130	Electrical And Electronics Workshop	Remya
6	MAT102	Vector Calculus, Differential Equation And Transforms	AMBILIMOL V P
7	HUN10	Professional Communication	Sreeti Gangadharan
8	EST102	Programming In C	DHANUNATH R

COURSE OBJECTIVES AND COURSE OUTCOME FOR

CYT100: ENGINEERING CHEMISTRY

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes On completion of course the students will be able to:
1	Dynamics of mechanical and electrical oscillation using Fourier series and integrals; time and frequency representations for driven damped oscillators, resonance; one-dimensional waves in classical mechanics and electromagnetism; normal modes.	Solve for the solutions and describe the behavior of a damped and driven harmonic oscillator in both time and frequency domains. Damped and Forced Oscillations oscillating system problems.
2	The fundamental principles of photonics that complement the topics in the optics and laser courses and to help students develop problem-solving skills applicable to real-world photonics problems.	Define and explain the propagation of light in conducting and non-conducting media.
3	Introduce basic concepts and principles of acoustics.	Define and explain the physics governing laser behaviour and light matter interaction ting and non-conducting media.
4		Apply wave optics and diffraction theory to a range of problems
5		Explain and calculate the physical effects of acoustic reflections, absorption, scattering, diffusion, diffraction, and propagation losses.
6		Use advanced theoretical, numerical, and experimental techniques to model and analyze acoustical elements in musical instruments, the human voice, room acoustics, and audio.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

EST100: ENGINEERING MECHANICS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Increase ability to communicate with people.	To hand letter will improve.
2	Learn to sketch and take field dimensions.	To perform basic sketching techniques will improve.
3	Learn to take data and transform it into graphic drawings.	To draw orthographic projections and sections.
4	Learn basic Auto Cad skills.	To use architectural and engineering scales will increase.
5	Learn basic engineering drawing formats	To produce engineered drawings will improve
6	Prepare the student for future Engineering positions	To convert sketches to engineered drawings will increase.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

EST130: BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To get basic idea about types, specification and common values of passive components.	Student can identify the active and passive electronic components.
2	To familiarize the working and characteristics of diodes transistors, MOSFET and some measuring instruments.	Student can setup simple circuits using diodes, transistors and other electronic components.
3	To understand working of diodes in circuits and in rectifiers.	Student will get fundamental idea about basic communication and entertainment electronics.
4	To understand the concept of mobile networks.	Student will get fundamental idea about mobile operation.
5		Student will get fundamental idea about different electronic circuits.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

CYL120: ENGINEERING CHEMISTRY LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Dynamics of mechanical and electrical oscillation using Fourier series and integrals; time and frequency representations for driven damped oscillators, resonance; one-dimensional waves in classical mechanics and electromagnetism; normal modes.	Solve for the solutions and describe the behavior of a damped and driven harmonic oscillator in both time and frequency domains. Damped and Forced Oscillations oscillating system problems.
2	The fundamental principles of photonics that complement the topics in the optics and laser courses and to help students develop problem-solving skills applicable to real-world photonics problems.	Define and explain the propagation of light in conducting and non-conducting media.
3	Introduce basic concepts and principles of acoustics.	Define and explain the physics governing laser behaviour and light matter interaction ting and non-conducting media.
4		Apply wave optics and diffraction theory to a range of problems
5		Explain and calculate the physical effects of acoustic reflections, absorption, scattering, diffusion, diffraction, and propagation losses.
6		Use advanced theoretical, numerical, and experimental techniques to model and analyze acoustical elements in musical instruments, the human voice, room acoustics, and audio.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

ESL130: ELECTRICAL AND ELECTRONICS WORKSHOP

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To get basic idea about types, specification and common values of passive components.	Student can identify the active and passive electronic components.
2	To familiarise the working and characteristics of diodes transistors, MOSFET and some measuring instruments.	Student can setup simple circuits using diodes, transistors and other electronic components.
3	To understand working of diodes in circuits and in rectifiers.	Student will get fundamental idea about basic communication and entertainment electronics.
4	To understand the concept of mobile networks.	Student will get fundamental idea about mobile operation.
5		Student will get fundamental idea about different electronic circuits.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

MAT 102 - VECTOR CALCULUS, DIFFERENTIAL EQUATION AND TRANSFORMS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes On completion of course the students will be able to:
1	To put it briefly, the point of this class is to take your existing knowledge of calculus and apply it towards the construction and solution of mathematical models in the form of differential equations.	Distinguish between linear, partial and ordinary differential equations. State the basic existence theorem for 1st order ODE's and use the theorem to determine a solution interval
2	Solve non-homogeneous linear equations with constant coefficients using the methods of undetermined coefficients and variation of parameters.	Recognize and solve a non homogeneous differential equation. Find particular solutions to initial value problems.
3	Introduce the Fourier series and its application to the solution of partial differential equation.	Find the Fourier series representation of a function of one variable.
4	To provide the student with the concept and the understanding of basics in Partial Differential Equations.	Knowledge in the Technic, methodology of solving Partial Differential Equations. A basic understanding in the Transforms which are useful in solving engineering problems.
5	This course introduces ideas of wave equation and heat equation which are widely used in the 38modeling and analysis of a wide range of physical phenomena and has got applications across all branches of engineering.	At the end of the course students will have acquired basic knowledge of differential equations and methods of solving them and their use in analyzing typical mechanical or electrical systems.

COURSE OBJECTIVES AND COURSE OUTCOME FOR

HUN 102: PROFESSIONAL COMMUNICATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To excite the student on creative design and its significance	To appreciate different elements involved in design and to apply them when they called for.
2	To make the student aware of the processes involved in design	Aware of product centred and user centred aspects that makes in the design process.
3	To make the student understand the interesting interaction of various segments of humanities, sciences and engineering in the evolution of a design	To be aware of different stages in design process and results of incorporating other fields with engineering stream
4	To get an exposure as to how to engineer a design.	Understand different stages in manufacturing of a designed product

COURSE OBJECTIVES AND COURSE OUTCOME FOR

EST102: PROGRAMMING IN C

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes On completion of course the students will be able to:
1	Competency in an engineering or science profession via promotion to positions of increasing responsibility, publications, and/or conference presentations.	An ability to apply knowledge of mathematics, science, and engineering.
2	Adaptability to new developments in science and technology by successfully completing or pursuing graduate education in engineering or related fields, or participating in professional development and/or industrial training courses.	An ability to design and conduct experiments, as well as to analyze and interpret data.
3		An ability to identify, formulate, and solve engineering problems
4		Understanding of professional and ethical responsibility
5		The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
6		A recognition of the need for, and an ability to engage in life-long learning

S4 ECE

S4 ECE (2019 Batch)

Sl no	Course code	Subject name	Staff Handled
1	MAT204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	LIJIMOLE S
2	ECT202	ANALOG CIRCUITS	ANUP VASAVAN
3	ECT204	SIGNALS AND SYSTEMS	PRAJEESH R
4	ECT206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	ARATHI BABU
5	HUT200	PROFESSIONAL ETHICS	PONNAMBILI S
6	MCN202	CONSTITUTION OF INDIA	LEKSHMI M G
7	ECL202	ANALOG CIRCUITS AND SIMULATION LAB	ANUP VASAVAN
8	ECL204	MICROCONTROLLER LAB	SAMITHA T

MAT 204Probability, Random Processes and Numerical methods

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Understand concepts of probability, conditional probability and independence.	Understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.
2	Understand random variables and probability distributions.	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
3	Understand moment generating and characteristic functions.	Analyse random processes using autocorrelation, power spectrum and Poisson process model as appropriate.
4	Understand and apply large deviation theory and Chernoff's bounds.	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
5	Understand and apply Poisson, birth-death and renewal processes.	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.

ECT202 ANALOG CIRCUITS

Sl.No.	Course Objectives	Course Outcomes
		On completion of the course the student will be able to
1.	This course aims to develop the skill of analyse and design of different types of analog circuits using discrete electronic components.	Design analog signal processing circuits using diodes and first order RC circuit
2		Analyse basic amplifiers using BJT and MOSFET
3		Apply the principle of oscillator and regulated power supply circuits.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

ECT 204 SIGNALS AND SYSTEMS

Sl. No.	Course objective	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This couse aims to lay the foundational aspects of signals and systems in both continuous time and discrete time, in preparation for more advanced subjects in digital signal processing, image processing, communication theory and control systems.	Apply properties of signals and systems to classify them
2		Represent signals with the help of series and transforms
		Describe orthogonality of signals and convolution integral.
4		Apply transfer function to compute the LTI response to input signals.
5		Apply sampling theorem to discretize continuous time signals

ECT 206: COMPUTER ARCHITECTURE AND MICROCONTROLLERS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course aims to impart knowledge of basic computer architecture and modern microcontrollers.	Explain the functional units, I/O and memory management w.r.t a typical computer architecture.
2		Distinguish between microprocessor and microcontroller.
3		Develop simple programs using assembly language programming.
4		Interface 8051 microcontroller with peripheral devices using ALP/Embedded C
5		Familiarize system software and Advanced RISC Machine Architecture.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

HUT 200 Professional Ethics

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To enable students to create awareness on ethics and human values.	Understand the core values that shape the ethical behaviour of a professional.
2		Adopt a good character and follow an ethical life.
3		Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
4		Solve moral and ethical problems through exploration and assessment by established experiments.
5		Apply the knowledge of human values and social values to contemporary ethical values and global issues.

COURSE OBJECTIVE AND COURSE OUTCOME FOR

MCN202   CONSTITUTION OF INDIA

Sl no	Course Objective	Course Outcome
		On completion of course the student will be able to
1	The study of their own country constitution and studying the importance environment as well as understanding their own human rights help the students to concentrate on their day to day discipline	Explain the background of the present constitution of India and features.
2	It also gives the knowledge and strength to face the society and people.	Utilize the fundamental rights and duties.
3		Understand the working of the union executive, parliament and judiciary.
4		Understand the working of the state executive, legislature and judiciary.
5		Utilize the special provisions and statutory institutions.
6		Show national and patriotic spirit as responsible citizens of the country

COURSE OBJECTIVE AND COURSE OUTCOME FOR

ECL 202: ANALOG CIRCUITS AND SIMULATION LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	This course aims to (i) familiarize students with the Analog Circuits Design through the implementation of basic Analog Circuits using discrete components.	Design and demonstrate the functioning of basic analog circuits using discrete components.
2	familiarize students with simulation of basic Analog Circuits.	Design and simulate the functioning of basic analog circuits using simulation tools.
3		Function effectively as an individual and in a team to accomplish the given task.

COURSE OBJECTIVE AND COURSE OUTCOME FOR

ECL 204: MICROCONTROLLER LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	This course aims to (i) Familiarize the students with Assembly Language Programming of modern microcontrollers.	Write an Assembly language program/Embedded C program for performing data manipulation.
2	Impart the skills for interfacing the microcontroller with the help of Embedded C/Assembly Language Programming	Develop ALP/Embedded C Programs to interface microcontroller with peripherals
3		Study of Flip Flops, synchronous and asynchronous counters
4		Perform programming/interfacing experiments with IDE for modern microcontrollers.

S6 ECE

DIGITAL COMMUNICATION

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To understand the concept of Digital representation of analog source	Illustrate the Digital representation of analog source
2	To understand the Performance comparison various pulse modulation schemes	Compare the performance of various Digital Pulse Modulation Schemes
3	To discuss Inter Symbol Interference (ISI) problem in digital communication and to derive the Nyquist Criteria for zero ISI in data Transmission	Construct signal space representation of signal using Gram Schmidt orthonormalisation procedure
4	To analyse the error probability for different modulation schemes like BPSK, BFSK, QPSK etc.	Compare the error probability for different digital modulation schemes like BPSK, BFSK, QPSK etc.
5	To understand various Multiple Access Techniques	Understand various Diversity Techniques

VLSI

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To give the knowledge about IC Fabrication Techniques	The students will be able to design and analyse various MOSFET and CMOS logic circuits.
2	To impart the skill of analysis and design of MOSFET and CMOS logic circuits.	

ANTENNA & WAVE PROPOGATION

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To learn the basic working of antennas.	The basic working of antennas
2	To study various antennas, arrays and radiation patterns of antennas	Various antennas, arrays and radiation patterns of antennas
3	To understand various techniques involved in various antenna parameter measurements.	Various techniques involved in various antenna parameter measurements
4	To understand the propagation of radio waves in the atmosphere.	The propagation of radio waves in the atmosphere.

EMBEDDED SYSTEMS

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To have a thorough understanding of the basic structure and design of an Embedded System	Understand the basics of an embedded system
2	To study the different ways of communicating with I/O devices and standard I/O interfaces	Develop program for an embedded system.
3	To study the basics of RTOS for Embedded systems.	Design, implement and test an embedded system
4	To study the programming concepts of Embedded Systems	

OBJECT ORIENTED PROGRAMMING

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To introduce the Object Oriented Programming paradigm using C++ and Java as the languages.	A thorough understanding of the features of OOP like class construction, polymorphism and inheritance of C++ and Java.
2	To learn simple Android application development from the fundamentals.	An understanding of advanced features of C++ such as templates, abstract classes and virtual functions
3		Knowledge of advanced features of Java such as multithreading, packages and error management.
4		Skills in designing android application development

DIGITAL IMAGE PROCESSING

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To understand the fundamentals of image processing andvarious transforms used in image processing	Learn the basic elements of image processing and various image transforms.
2	To study image processing techniques like image enhancement and image restoration.	Discuss spatial domain methods and frequency domain methods of image enhancement and degradation model for restoration..
3	To study image processing techniques like image segmentation and image representation.	Learn the lossless and lossy compression, point, line and edge detection, descriptors..
4	To study morphological image processing.	Discuss different morphological operations.

COMMUNICATION ENGINEERING LAB(ANALOG & DIGITAL)

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To provide experience on design, testing and analysis of few electronic circuits used in communication engineering	The students will be able to understand the basic concepts of circuits used in communication systems.

MICROCONTROLLER LAB

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To understand Assembly Language/embedded C programming of Microcontroller	Program Micro controllers.
2	To interface simple peripheral devices to a Microcontroller.	Interface various peripheral devices to Micro controller.
3	To equip student groups to design and implement simple embedded systems.	Function effectively as an individual and in a team to accomplish the given task.

S8 ECE

EC402 NAN0 ELECTRONICS

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To introduce the concepts of nanoelectronics.	The students will be able to understand basic concepts of nanoelectronic devices and nano technology.

EC404 ADVANCED COMMUNICATION SYSTEMS

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To impart the basic concepts of various communication system.	The students will be able to understand the basics and technology of advanced communication system

EC464 LOW POWER VLSI DESIGN

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	• To identify the power dissipation mechanisms in various MOS logic styles	Identify the sources of power dissipation in digital IC systems
2	To familiarize suitable techniques to reduce power dissipation	Understand the impact of power on system performance and reliability
3		Understand leakage sources and reduction techniques
4		Recognise advanced issues in VLSI systems, specific to the deep-submicron silicon technologies

CE 482ENVIRONMENTAL IMPACT ASSESMENT

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To study the various types of environmental pollution	To have a basic knowledge of various pollution sources and their impacts
2	To study the impact due to various types of pollutants and their assessment techniques	

EC492 PROJECT

Sl NO:	COURSE OBJECTIVE	COURSE OUTCOMES
1	To apply engineering knowledge in practical problem solving	Think innovatively on the development of components, products, processes or technologies in the engineering field
2	To foster innovation in design of products, processes or systems	Apply knowledge gained in solving real life engineering problems