KLS Vishwanathrao Deshpande Institute of Technology
(Approved by AICTE, New Delhi. Affiliated to VTU, Belagavi)
(Recognized Under Section 2(f) by UGC, New Delhi)
Udyog Vidya Nagar, Haliyal – 581329, Dist.: Uttara Kannada
Phone: 08284-220861, 220334, 221409, Fax: 08284-220813
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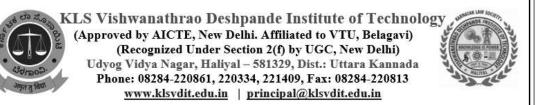
Sl. No.	Sub Name	CO's	CO Statement
		15MAT11.1	To apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
		15MAT11.2	To use partial derivatives to calculate rates of change of multivariate functions.
1	Engineering Maths-I	15MAT11.3	To analyze position, velocity, and acceleration in two or three dimensions using the calculus of vector valued functions.
		15MAT11.4	To recognize and solve first-order ordinary differential equations, Newton's law of cooling.
		15MAT11.5	To use matrices techniques for solving systems of linear equations in the different areas of Linear Algebra
		15PHY12.1	Learn and understand intricacies of matter and energy which is essential to explore the role of subatomic particles in understanding properties of matter at macro, micro and nano level.
		15PHY12.2	Exploring the inadequacies of classical theory and to apply the principles of quantum mechanics which suites real time applications.
2	Engineering Physics	15PHY12.3	Learn the niceties of technologically important material such as conductor, semiconductor and superconductor, their potential properties in understanding there use in engineering applications.
		15PHY12.4	Understand the physics of lasers and optical fibers and to appreciate their role in modern instruments.
		15PHY12.5	Understand the basics of crystal structures and apply to engineering field.
		15PHY12.6	Recognize the significance of shock waves and its applications in aerodynamics and aerospace engineering.
	Elements of Civil Engg. & Mechanics	15CIV13.1	Know the basics of Civil Egineering, its scope of study, knowledge about roads, bridges and dams
		15CIV13.2	Comprehend the action of Forces, Moments and other loads on systems of rigid bodies.
3		15CIV13.3	Compute the reactive forces and the effects that develop as a result of the external loads
		15CIV13.4	Locate the Centroid and compute the Moment of Inertia of regular cross sections
		15CIV13.5	Express the relationship between the motion of bodies
	Elements of	15EME	students shall demonstrate knowledge associated with various energy sources, formation of steam
			student shall demonstrate knowledge associated with prime movers such as turbines and IC engines
4	Mechanical Engineering	CO3	students shall demonstrate knowledge associated with various metal removing process and robotics automation
	Engineering	CO4	students shall understanding of application and usage of various engineering materials
		CO5	students shall demonstrate knowledge associated with refrigeration and air conditioning systems
		15ELE14.1	Students will be able to comprehend the basic concept of AC and DC circuit
_	Basic	15ELE14.2	Explain the working principle and construction of AC and DC machines
5	Electrical Engineering	15ELE14.3	Explain the working principle and construction of transformer
	Engineering	15ELE14.4	Understand the electrical wiring concepts, earthing, domestic protection devices and electric shock
	Workshop	15WSL16.1	The Metal removel process by fitting practice and preparation of joints using appropriate fitting tools
6	Practice	15WSL16.2	Preparation of welded joints
		15WSL16.3	Development of surfaces and forming models by soldering job.

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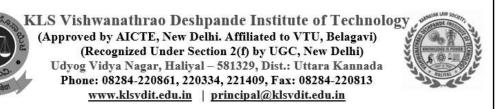
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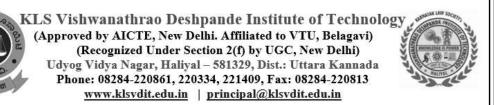
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	Engg. Physics Lab.	15PHYL17.1	To recognize the importance of light by exploring its interaction with matter and in realizing its characteristic properties.
		15PHYL17.2	Understanding of mechanical properties of the material by the application of stress.
7		15PHYL17.3	Appreciating the significance of elementary electric circuits in the functioning of various electric /electronic devices and gaining understanding of physics of the materials.
		15PHYL17.4	Design and implementation of electronic circuits to gain better understanding of physics of semiconductor devices.
		15PHYL17.5	Appreciating the role of Quantum mechanics in exploring the electrical properties of the materials.
		15MAT21.1	To solve differential equations of electrical circuits, forced oscillation of mass spring and elementary heat transfer
		15MAT21.2	To solve partial differential equations fluid mechanics, electromagnetic theory and heat transfer
8	Engineering Maths-II	15MAT21.3	To evaluate double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region.
		15MAT21.4	To use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows
		15MAT21.5	To use Laplace transforms to determine general or complete solutions to linear ODE
		15CHE22.1	Knowledge on the types of electrodes, electrochemical and concentration cells, classical and modern batteries and fuel cells
	Engineering Chemistry	15CHE22.2	Knowledge on the causes and effects of corrosion of metals and control of corrosion. Modification of the surface properties of metals to develop resistance to corrosion, wear, tear, impact, etc. by electroplating and electroless plating.
9		15CHE22.3	Knowledge on the importance of energy conservation in the context of energy crisis, fuel properties and propose some amicable alternatives for energy which are also sustainable.
		15CHE22.4	Knowledge on the replacement of conventional materials by polymers for various applications
		15CHE22.5	Knowledge on the boiler troubles, sewage treatment and desalination of sea water and overviewing of synthesis, properties and applications of nanomaterials.
		15CED23.1	Achieve knowledge of design and development of problem solving skills.
		15CED23.2	Understand the basic principles of programming in C language.
10	Programming in C & Data	15CED23.3	Design and develop modular programming skills.
	Structures	15CED23.4	Effective utilization of memory using pointer technology,
		15CED23.5	Understand the basic concepts of preprocessor directives, data structures & file operations
		15CED24.1	Students will be able to demonstrate the usage of CAD software.
	Computer	15CED24.2	Students will be able to visualize and draw projection of points and lines
11	Aided Engineering	15CED24.3	Students will be able to visualize and draw Orthographic projections, Sections of solids and Isometric views of solids
	Drawing	15CED24.4	Students are evaluated for their ability in appl ying various concepts to solve practical problems related to engineering drawing
		15ELN25.1	Understand the characteristics of PN Junction diode
		15ELN25.2	Understand the biasing methods of BJT and applications of BJT
12	Basic Electronics	15ELN25.3	Discuss ideal and practical operational amplifier (op-amp) parameters and apply them to design various applications
	Diced onles	15ELN25.4	Describe the various types of modulation schemes and transducer applications
		15ELN25.5	Understand and apply the various Boolean Logic to build the combinational logics circuits and understand the applications of 8051 microcontrollers.



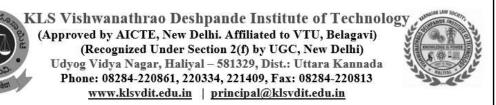
	Computer Programming 4ab.	15CPL26.1	Gaining knowledeg of varioursparts of computers
		15CPL26.2	Able to draw flowchart and write algorithms
13		15CPL26.3	Able design and development of C problem solving skills
		15CPL26.4	Able design and develop module programming skills
		15CPL26.5	Able tto trace and debug the program
14	Engineering	15CHEL27.1	Students will have the knowledge in handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results
14	Chemistry Lab.	15CHEL27.2	Students will have the knowledge in carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results



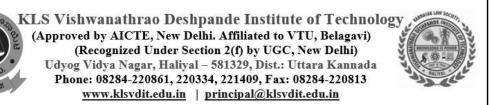
			21d CEMECTED
	T	T	3 <sup>rd</sup> SEMESTER
		153447211	To know the use of periodic signals and to calculate Fourier series of periodic as
		15MAT31.1	well as non-periodic functions.  To find the infinite Fourier transform and Z-transform of various functions and
15		15MAT31.2	its applications to solve difference equations.
13		13WA131.2	To employ appropriate numerical methods to solve algebraic and
	Engineering	15MAT31.3	transcendental equations
	Mathematics-III		To calculate the values of unknowns by various numerical methods and solve the
		15MAT31.4	definite integrals by various numerical methods.
			To apply vector integral theorems to solve the integrals and to find the extremal of
		15MAT31.5	the functional
		15EC32.1	To understand the modelling of transistor using hybrid equivalent model and Re
			model, perform the analysis of amplifier parameters at low frequencies for
			different configurations & student should be able to the analysis of
		1500000	Cascaded&Cascode system with example
16		15EC32.2	to understand the construction & VI characteristic of different types of FETS &
	Amalaa	15EC32.3	their different biasing scheme.  To understand the modeling of FET amplifiers & analysis of amplifier parameters.
	Analog Electronics	15EC52.5	Understand the method of analysing frequency response of BJT & FET amplifier
	Licetronics		with tool of bode plot
		15EC32.4	To understand the different class of power amplifier with analysis of their
		102002	efficiency & their applications
		15EC32.5	To understand the concept of feedback & types of feedback, apply concept of
			positive feedback to oscillator & study of different types of oscillators
		15EC33.1	familiar with basic logic gates and independently builds simple logic circuits using
			basic and universal gates. Understand Boolean algebra and able to simplify
			boolean functions using K-maps.
		15EC33.2	design combinational logic circuits using Quine Mc-Cluskey method and
1.7		15EC33.3	problems with Don't cares
17	Digital	13EC33.3	understand single IC solutions of combinational Logic Using Decoders, Encoders, Multiplexers, Demultiplexers, comparators, adders etc
	Electronics	15EC33.4	familiar with basic sequential logic components: SR, JK,T&D latches and
		132033.1	flipflops and their usage with capability to analyse sequential logic circuits such as
			shift registers, counters, types of counters with design procedure.
		15EC33.5	Understand state machines notations concept and do sequential circuit design
			based state machines notations and state table using SR FF,JK FF and D FF's
		15EC34.1	Describe, Apply and Analyse basic network concepts emphasizing Series and
			Parallel Combination of Passive Components, Source Transformation, mesh and
			nodal techniques
		15EC34.2	Apply and analyse various network theorems in solving the problems related to
18	Notrocale	15EC34.3	Electrical Circuits  Analyse the network by using Laplace as mathematical tool and to understand and
	Network	13EC34.3	analyse transients of 1st and 2nd order networks
	Analysis	15EC34.4	Understand the concepts such as Q-factors and bandwidth of series and parallel
		132034.4	resonance
		15EC34.5	Describe and analyse two port networks and methods of analysing the Electrical
			Networks
		15EC35.1	Define different types of measurement errors in instrumentation
		15EC35.2	Explain the various meters and designing various ranges meters and various
1.0		1311033.2	instruments.
19	Electronic	15EC35.3	Sketch the diagram to elaborate the construction and operation of various Digital
	Instrumentation		instruments e.g. CRO, Signal generators
		15EC35.4	Sketch the diagram to elaborate the construction and operation of various types of
			signal generators and measuring Instruments



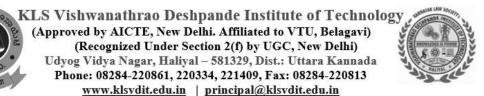
		15EC35.5	Explain the different types of DC and AC bridges by deriving the expressions for
		1011033.3	balancing condition and analyze with numerical problems & also explain various
		15EC36.1	types of transducers.  Understand the coulomb's law & Electric field & to be familiar with different
		15EC50.1	methods of calculation of Electric field due to various types of charge distribution
		15EC36.2	Apply the concept of Electric potential, passions & Laplace equation to the
			boundary value problem
		15EC36.3	Understand the different methods of calculation of Magnetic field, Magnetic
	<b>.</b>		vector potential due to various types of current carrying elements, Magneto static
20	Engineering Electromagnetics		boundary conditions, force calculation between current carrying wires, torque on closed loops and solve related problems
	Licetromagneties	15EC36.4	Understand the concept of Faradays law & derive four Maxwell's equation for
			static & time varying
		15EC36.5	Understand the wave nature from Maxwell's equation & to understand wave
			propagation in different medium & to explore the concepts of skin depth &
		15ECL37.1	poynting's vector  Test circuits of rectifiers, clipping circuits, clamping circuits and voltage
		TJECES7.1	regulators
	A1	15ECL37.2	Determine the characteristics of BJT and FET amplifiers and plot its frequency
21	Analog Electronics Lab		response
	Erectionies Eas	15ECL37.3	Compute the performance parameters of amplifiers and voltage regulators
		15ECL37.4	Design and test the basic BJT/FET amplifiers, BJT Power amplifier and oscillators
		15ECL38.1	Understand the basics of Digital Circuits and its applications.
22	Digital	15ECL38.2	Have in-depth knowledge of designing combinational circuit and sequential circuit
22	Electronics Lab	15ECL38.3	design Understand the device simulation on an EDA tool
			4 <sup>TH</sup> SEMESTER
		15MAT41.1	
		15MAT41.2	To solve higher order differential equation by various numerical techniques
	Engineering Mathematics-IV		To solve the ordinary and partial differential equation by using special functions
23		15MAT41.3	To interpret the analyticity, calculate potential field residues and poles of complex potentials.
		15MAT41.4	To calculate and analyze the probability distribution of the given statistical data
		15MAT41.5	
		15EC42.1	To analyze statistical inference based on the sampling distribution comprehend with basic architecture of 8086 microprocessor.
			•
		15EC42.2	Program 8086 microprocessor using assembly level language
24	Microprocessor	15EC42.3	Use macros and procedures in 8086 program
		15EC42.4	interfacing of 16bit microprocessor with memory and peripheral chips involving system design
		15EC42.5	comprehend architecture of 8088, 8087 coprocessor and other CPU architectures
		15EC43.1	Know the benefits of using control system & to design & perform analysis on
		15EC43.2	various control systems  Find out the transfer function of mechanical, electrical & electromechanical
		13EC43.2	systems, block diagrams & signal flow graphs
25	Control System	15EC43.3	Describe quantitatively transient response of first & second order systems
		15EC43.4	Understand & determine stability using Routh-Hurwitz technique & root locus
		155042.5	technique  Learn the field of system stability which will be further enhanced by the
		15417725	Learn the field of system stability which will be further enhanced by the
		15EC43.5	
		15EC43.6	knowledge of frequency response analysis like Polar plots, Bode plots etc  Find digital responses from the transfer function.Draw the block diagram from



			dynamic equation & represent time
		15EC44.1	Classify the signals as continuous/discrete, periodic/aperiodic, even/odd, energy/power and deterministic/random signals.
		15EC44.2	Determine the linearity, causality, time-invariance and stability properties of continuous and discrete time systems
26	Signals & System	15EC44.3	Compute the response of a Continuous and Discrete LTI system using convolution integral and convolution sum
	System	15EC44.4	Determine the spectral characteristics of continuous and discrete time signal using Fourier analysis
		15EC44.5	Compute Z-transforms, inverse Z- transforms and transfer functions of complex LTI systems
		15EC45.1	Design simple systems for generating and demodulating AM, DSB, SSB, VSB signals.
		15EC45.2	Understand the concepts in Angle modulation for the design of communication systems
27	Principles of Communication	15EC45.3	Design simple systems for generating and demodulating frequency modulated signals
	System	15EC45.4	Learn the concepts of random process and various types of noise
		15EC45.5	Evaluate the performance of the communication system in presence of noise
		15EC45.6	Analyze pulse modulation and sampling techniques
		15EC46.1	To study the basic principles, configurations and practical limitations of op-amp.
	Linear Integrated Circuits	15EC46.2	To understand the various linear and non-linear applications of op-amp
28		15EC46.3	To analyze and deign op-amp oscillators, single chip oscillators and frequency generators
-		15EC46.4	To analyze, design and explain the characteristics and applications of active filters
		15EC46.5	To understand the operation of the most commonly used D/A and A/D converter types and its applications
		15ECL47.1	Write and execute 8086 assembly level programs to perform data transfer, arithmetic and logical operations
29	Microprocessor Lab	15ECL47.2	Perform string transfer, string reversing, searching a character in a string with string manipulation instructions of 8086 and Utilize procedures and macros in programming 8086
		15ECL47.3	Demonstrate the interfacing of 8086 with 7 segment display, matrix keyboard, logical controller, stepper motor, ADC, DAC, and LDR for simple applications
		15ECL48.1	Illustrate the pulse and flat top sampling techniques using basic circuits
20	Linear ICs &	15ECL48.2	Demonstrate addition and integration using linear ICs, and 555 timer operations to generate signals/pulses
30	Communication Lab	15ECL48.3	Demonstrate AM and FM operations and frequency synthesis
	Luo	15ECL48.4	Design and illustrate the operation of instrumentation amplifier, LPF, HPF, DAC and oscillators using linear IC



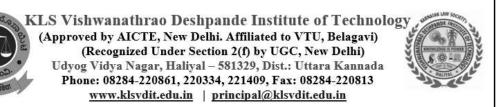
			5 <sup>TH</sup> SEMESTER
		15ES51.1	Understand the functions of management differentiate between Administration and Management and know about planning and decision making
	Management &	15ES51.2	Learn the principles of organization, importance of staffing, leadership qualities, styles, communication and motivation
31	Entrepreneurship Development	15ES51.3	Learn the importance of business and its responsibilities along with concepts of entrepreneurship
		15ES51.4	Understand the importance and use of SSI and Govt. schemes that promote SSI
		15ES51.5	Learn and prepare project report along with study of PERT and CPM control techniques
		15EC52.1	Determine response of LTI systems using time domain and DFT techniques.
	Digital Signal	15EC52.2	Compute DFT of real and complex discrete time signals.
32	Processing	15EC52.3	
		15EC52.4	Compute DFT using FFT algorithms and linear filtering approach.
			Solve problems on digital filter design and realize using digital computations.
22		15EC53.1	Realize programs in VHDL/verilog in data-flow,behavioral and gate-level modeling styles.
33		15EC53.2	Design testbench for verifying functionality of digital circuits/system
	Verilog HDL	15EC53.3	Apply verilog tasks and directives for timing and delay simulation.
		15EC53.4	Use EDA tools in digital circuit modelsim - simulation and functional verification.
		15EC54.1	Explain concept of Dependent & Independent Source, measure of information, Entropy, Rate of Information and Order of a source
		15EC54.2	Represent the information using Shannon Encoding, Shannon Fano, Prefix and
	Information		Huffman Encoding Algorithms
34	Theory & Coding	15EC54.3	Model the continuous and discrete communication channels using input, output and joint probabilities
		15EC54.4	Determine a codeword comprising of the check bits computed using Linear Block codes, cyclic codes & convolutional codes
		15EC54.5	Design the encoding and decoding circuits for Linear Block codes, cyclic codes, convolutional codes, BCH and Golay codes
		15EC553.1	To understand the goals and structure of the operating system
		15EC553.2	To study the operation, process management, threads of the Operating system
2.5	Operating	15EC553.3	To understand the concept of memory management and virtual memory
35	System	15EC553.4	To study Scheduling algorithms
		15EC553.5	To study different files types, operations and also about message passing
		15EC561.1	Acquire an overview of automotive components, subsystems, and basics of Electronic Engine Control in today's automotive industry
		15EC561.2	Use available automotive sensors and actuators while interfacing with microcontrollers / microprocessors during automotive system design
36	Automotive Electronics	15EC561.3	Analyze the networking of various modules in automotive systems, communication protocols and diagnostics of the sub systems
		15EC561.4	Design and implement the electronics that attribute the reliability, safety, and smartness to the automobiles, providing add-on comforts and get fair idea on future Automotive Electronic Systems
		15EC562.1	Understand Encapsulation, Inheritance and Polymorphism and Solve the problem with object-oriented approach.
	Object Oriented	15EC562.2	Analyze the problem statement and build object-oriented system model
37	Programming Using C++	15EC562.3	Understand function overloading, operator overloading and virtual functions



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		15EC562.4	Understand and differentiate the advantages of object-oriented programming over procedure-oriented programming
		15ECL57.1	Simulate discrete time signals and verification of sampling theorem
		15ECL57.2	Compute the DFT for a discrete signal and verification of its properties Using MATLAB
38	Digital Signal	15ECL57.3	Find solution to the difference equations and computation of convolution and correlation along with the verification of properties.
	Processing Lab	15ECL57.4	Compute and display the filtering operations and compare with Theoretical value
		15ECL57.5	Implement the DSP computations on DSP hardware and verify the result
		15ECL58.1	Write the Verilog/VHDL programs to simulate Combinational circuits in Dataflow, Behavioral and Gate level Abstractions
		15ECL58.2	Describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms.
39	HDL Lab	15ECL58.3	Synthesize Combinational and Sequential circuits on programmable ICs and test the hardware
		15ECL58.4	Interface the hardware to the programmable chips and obtain the required output.
			6 <sup>TH</sup> SEMESTER
		15EC61.1	Associate and apply the concepts of bandpass sampling to well specified signals
		152.501.1	and channels and understand the process of converting bandpass signal into low
			pass signal and vice-versa and the different forms of digital signal representation
			in its baseband forms. Interpret the concepts of bandpass signals and discuss the
			various forms of digital signal representation
40	Digital	15EC61.2	Analyze the mathematical model of AWGN channels, concepts of orthogonality and different types of receivers
40	Communication	15EC61.3	To understand different types of modulation techniques and their comparable analysis
		15EC61.4	To understand the dispersive nature of channel using ISI technique and
		13EC01.4	measurement of dispersion using eye diagram
		15EC61.5	Highlight the importane of spread spectrum techniques for providing the security
			for communication system.
		15EC62.1	Describe the architectural features and instructions of 32 bit microcontroller ARM Cortex M3
	ARM	15EC62.2	Apply the knowledge gained for Programming ARM Cortex M3 for different applications
41	Microcontroller & Embedded	15EC62.3	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system
	Systems	15EC62.4	Develop the hardware /software co-design and firmware design approaches
	- Systems	15EC62.5	
			Explain the need of real time operating system for embedded system applications.
		15EC63.1	Comprehend the physics of various types of MOSFET and its characteristics, inverter topologies in CMOS and BICMOS and fabrication of IC in different technologies
		15EC63.2	Design digital CMOS circuits and layouts using stick diagram familiarizing with different CMOS logic styles along with the design of memories with efficient architectures
		15EC63.3	Have an ability to design elementary data paths for microprocessors, including
42	VLSI Design	152505.5	moderate-speed adder, subtractors and multipliers and to do the estimation of parasitic capacitance, study its impact on scaling and performance
		15EC63.4	Identify the significance of testable design & techniques to improve the fault coverage, detailed idea on the concepts of floor planning
		15EC63.5	Design actual CMOS subsystems in hardware languages of as a part of mini
		151.003.5	projects lab session along with several assignments covering the core concepts and reinforcing analytical skills learned in class and discuss the sections further so as
			to better the learning experience

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		15EC64.1	understand the fundamental concept of computer networks and distinguish
		13EC64.1	between OSI model/TCP IP protocol suite with different layers involved
		15EC64.2	identify different types of network topologies. Be familiar with the basic protocols
		132004.2	of computer networks, and how they can be used to assist in network
	Computer	15EC64.3	Understand the concept of transparent bridges, forwarding, routing, sub netting
43	Communication	132001.3	and distinguish between IPv4 and IPv6 protocol
	Network	15EC64.4	understand the importance of IEEE Standards for Ethernet, Fast Ethernet &
	(15EC64)		Gigabit Ethernet
		15EC64.5	perform an independent study and ability to adapt for continuous learning by
			carrying out seminars on recent trends in computer networks
		15EC654.1	understand the working principle of switching systems involved in
			telecommunication switching
		15EC654.2	learn about Iarchitecture, signaling and control of EPABX,
44	Digital	15EC654.3	Analysis of basic telecommunication traffic theory
	Switching	15EC654.4	design multistage switching structures involving time and space switching stages.
	Systems	15EC654.5	adapt to the continuous learning method and also to conduct independent study of
		=====================================	digital systems
		15EC655.1	Explain the underlying physics and principles of operation of Metal oxide
			semiconductor (MOS) capacitors and MOS field effect transistors
		15EC655.2	Describe and apply various biasing schemes for MOS amplifiers and to perform
			frequency analysis
l .		15EC655.3	Analyze and design microelectronic circuits like current steering circuits and
45	Microelectronics	1500000	current mirror circuits for linear amplifier
		15EC655.4	To Comprehend the working of amplifiers with active loads with frequency
		1500055.5	response
		15EC655.5	Contrast the input/output and gain characteristics of single-transistor, differential and common two-transistor linear amplifier building block stages
		15CS664.1	Understand Python syntax and semantics and be fluent in the use of Python flow
		1303004.1	control and functions.
		15CS664.2	Demonstrate proficiency in handling Strings and File Systems
	Python	15CS664.3	Implement Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
46	Application Programming	15CS664.4	Interpret the concepts of Object Oriented Programming as used in Python
		15CS664.5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python
		15CS664.6	Develop simple applications using the latest Python trends and technologies
		15ECL67.1	Understand the instruction set of 32 bit microcontroller ARM Cortex M3, and the
		15001 (5.5	software tool required for programming in Assembly and C language
		15ECL67.2	Develop assembly language programs using ARM Cortex M3 for different
17	Embedded	15ECL67.3	applications Interface external devices and I/O with ARM Cortex M3.
47	Controller Lab		
		15ECL67.4	Develop C language programs and library functions for embedded system
		15ECL68.1	applications Use the network simulator for learning and practice of networking algorithms
		15ECL68.2	Illustrate the operations of network protocols and algorithms using C programming.
40	Computer	15ECL68.3	Simulate the network with different configurations to measure the performance
48	Networks lab		parameters.
1	Titti diko iko	15ECL68.4	Implement the data link and routing protocols using C programming



			7 <sup>th</sup> SEMESTER
		15EC71.1	Analyze the working principle of various microwave sources and components.
		15EC71.2	Appreciate usage and working of microwave devices and realize them with the help of quantitative parameters.
49	Microwave & Antenna(	15EC71.3	Familiarize with basic antenna parameters and develop competency to design an antenna.
	Antenna	15EC71.4	Design an antenna array by determining its performance parameters and analyze the various antenna dipole
		15EC71.5	Select an appropriate antenna for a given application
		15EC72.1	Understand image formation and the role human visual system plays in perception of gray and color image data
50	Digital Image Processing	15EC72.2	Apply image processing techniques in both the spatial and frequency (Fourier) domains.
		15EC72.3	Conduct independent study and analysis of Image Enhancement techniques
		15EC72.4	Understand color models and Morphological Image Processing
		15EC72.5	Design image analysis techniques in the form of image segmentation, representation and to evaluate the Methodologies for segmentation
		15EC73.1	Realize the construction and working of various power devices
		15EC73.2	Analyze the thyristor circuits for various triggering conditions
51	Power	15EC73.3	Study and analysis of thyristor circuits with different turn-off methods
	Electronics	15EC73.4	Learn the applications of power devices in controlled rectifiers, converters and inverters under various load conditions
		15EC73.5	Appreciate the operation and characteristics of static switches and microelectronic relays.
		15EC744.1	To understand some basic mathematical concepts and pseudo random number generators required to cryptography
52	Cryptography	15EC744.2	To understand the basics of cryptography algorithms
		15EC744.3	To understand the authentication algorithms
		15EC751.1	Figure out the knowledge and concepts of digital signal processing techniques
		15EC751.2	Understand the computational building blocks of DSP processors and its speed issue
53	DSP Algorithms	15EC751.3	Understand the various addressing modes, peripherals, interrupts and pipelining structure of TMS320C54xx processor
	& Architecture	15EC751.4	Learn how to interface the external devices to TMS320C54xx processor in various modes
		15EC751.5	Understand basic DSP algorithms with their implementation
		15ECL76.1	Determine the characteristics and response of microwave devices and optical waveguide.
54	Advanced Communication	15ECL76.2	Determine the characteristics of microstrip antennas and devices and compute the parameters associated with it.
	Laboratory	15ECL76.3	Simulate the digital modulation schemes with the display of waveforms and computation of performance parameters
		15ECL76.4	Design and test the digital modulation circuits/systems and display the waveforms.
		15ECL77.1	To describe various digital circuits and simulate them using test benches
55	VLSI LABORATORY	15ECL77.2	Interpret concepts of DC Analysis, AC Analysis and Transient Analysis in analog circuits
		15ECL77.3	Design and simulate basic CMOS circuits like inverter, common source amplifier and differential amplifiers

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		15ECL77.4	Use basic amplifiers and further design higher level circuits like operational amplifier and analog/digital converters to meet desired parameters
		15ECL77.5	Use transistors to design gates and further using gates realize shift registers and adders to meet desired parameters
Yan.			8th SEMESTER
		15EC81.1	Understand the system architecture and the functional standard specified in LTE 4G.
	Wireless	15EC81.2	Analyze the role of LTE radio interface protocols and EPS Data convergence protocols to set up, reconfigure and release data and voice from users
56	Cellular and LTE 4G Broadband	15EC81.3	Demonstrate the UTRAN and EPS handling processes from set up to release including mobility management for a variety of data call scenarios
		15EC81.4	Test and Evaluate the Performance of resource management and packet data processing and transport algorithms
		15EC82.1	Classification and working of optical fiber with different modes of signal propagation
	Vibre ontice	15EC82.2	Describe the transmission characteristics and losses in optical fiber communication
57	Fiber optics &Networks	15EC82.3	Describe the construction and working principle of optical connectors, multiplexer and amplifier
		15EC82,4	Describe the constructional features and the characteristics of optical sources and detectors
		15EC82.5	Illustrate the networking aspects of optical fiber and describe various standards associated with it
		15EC835.1	Explain network security protocols
58	NETWORK	15EC835.2	Understand security concerns in Email and Internet Protocol
	AND CYBER SECURITY	15EC835.3	Discuss the cyber security problems
		15EC835.4	Explain and apply Cyber Security Framework

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