f

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

	COURSE OUTCOMES (Odd semester, 2020-21)

Course Name:	**BEE**		
Course Code	**FEC105**		
Faculty Name:	**Ms. Pratibha D. and Ms. Gejo G.**		
Year	1	**Sem**	I

CO Number	Course Outcome
FEC105.1	The students will be able to define or state the basic principle and definations of an electrical network(DC+AC), basic operation of single phase transformer and DC motors and generators
FEC105.2	The students will be able to explain the fundamentals of DC circuits, single phase AC circuits, three phase AC circuits , construction of transformers and DC motors and generators
FEC105.3	The students will be able to apply the fundamental laws of electricity to solve any given electrical circuit
FEC105.4	The students will be able to analyze the various parameters for the given AC (single andthree phase) and DC circuits and the performance of single phase transformer
FEC105.5	The students will be able to evaluate the various parameters for the given AC (single and three phase) and DC circuits and single phase transformer
FEC105.6	The students will be able to design/ simulate AC and DC circuits and analyze various parameters related to AC and DC networks.

Course Name:	**Applied Mathematics**		
Course Code	**ECC301**		
Faculty Name:	**Dr. Revathy**		
Year	2	**Sem**	III

CO Number	Course Outcome
ECC301.1	Students will be able toDemonstrate the knowledge of Laplace transforms,inverse Laplace transforms Fourier Series and integral,Vector algebra and calculus, Complex variable and Bessel Functions
ECC301.2	Students will be able to Understand Milne-Thomson method to find f(z), expand the periodic function by using Fourier series and comlex form of Fourier series Plot the image of the curve from Z-plane to W-plane
ECC301.3	Students will be able to apply Laplace transform to solve diff.equations.Apply appropriate theorem of vectors in engg.subjects Apply appropriate transforms in telecommunication engineering
ECC301.4	Students will be able to Demonstrate an ability to identify,formulate, analyze and synthesis complex engg.problems using Laplace transforms,Fourierseries and transforms,mapping,vectors and Bessel's functions
ECC301.5	Students will be able towork as a team by participating in the content beyound syllabus activity and peer learning happens through tutorial
ECC301.6	Students will be able to Participate and succeed in competitive exams.

Course Name:	**EDC**		
Course Code	**ECC302**		
Faculty Name:	**Lakshmi V**		
Year	2	**Sem**	III

CO Number	Course Outcome
ECC302.1	Students will be able to describe the operation of various semiconductor devices like pn junction , BJT, MOSFET and JFET and their applications.
ECC302.2	Students will be able to explain and discuss various types of semiconductor devices along with their I-V Characteristics and output waveforms with references to electronics circuits.
ECC302.3	Students will be able to apply the concept and derive the expressions for various performance measures of analog electronics circuits.
ECC302.4	Students will be able to analyze and relate circuit parameters with performance parameters
ECC302.5	Students will be able to evaluate and select suitable components to obtain proper performance of Amplifier circuits for the given specification
ECC302.6	Students will be able to design basic biaing circuits using BJT and MOSFET for a given specification and application

Course Name:	Digital System Design		
Course Code	ECC303		
Faculty Name:	Poonam Chakraborty		
Year	2	Sem	III

CO Number	Course Outcome
ECC303.1	Students will be able to define various types of number systems, Boolean laws and logic families parameters with examples.
ECC303.2	Students will be able to explain the functionality of logic gates, various combinational and sequential circuits.
ECC303.3	Students will be able to apply the concepts of Boolean algebra, K-Map and Quine Mc Clusky methods to reduce the logical expressions to a minimum hardware circuit.
ECC303.4	Students will be able to construct digital logic systems using various logic gates, combinational and sequential circuits.
ECC303.5	Students will be able to design registers and counters using different types of flip flops to perform specific task.
ECC303.6	Students will be able to analyze the performance of Programmable Logic Devices like PLA, PAL and FPGA using VHDL software.

Course Name:	Network Theory		
Course Code	ECC304		
Faculty Name:	Jithin Isaac		
Year	2	Sem	III

CO Number	Course Outcome
ECC304.1	The student will be able to learn the basic terminologies related to analysis of electrical circuits, Graph Theory & Two Port Networks.
ECC304.2	The student will be able to describe and identify the different theorems, parameters & terminologies used in the analysis of electrical circuits.
ECC304.3	The student will be able to apply the concepts of electrical circuit theory and compute the transient and steady state response of R, L, C circuits & Two Port Networks.
ECC304.4	The student will be able to analyze the effect of circuit elements on the stability and output characteristics of an electrical network.
ECC304.5	The student will be able to judge and select suitable components in order to make the output of a electrical network stable and in accordance with given requirements.
ECC304.6	The student will be able to design/synthesize electrical circuits as per given specifications.

Course Name:	EICS		
Course Code	ECC305		
Faculty Name:	Khan Naheed Anjum		
Year	2	Sem	III

CO Number	Course Outcome
ECC305.1	Students will be able to define and describe the basic terms and characteristics associated with electronic instruments and data acquisition systems. They will be able to define and describe the basic concepts of control systems.
ECC305.2	Students will be able to explain the principle of operation and discuss about the measurement of electrical and non-electrical parameters using transducers and bridges. The students will be able to understand the purpose of a control system and its usefulness in various applications through examples.
ECC305.3	Students will be able to apply their knowledge to find solutions to problems using transducers and bridges. Students will be able to apply the knowledge of Block diagram reduction and Signal flow graph rules to derive the mathematical model of a control system.
ECC305.4	Students will be able to analyze time domain and frequency domain parameters for a given system using various techniques. They will be able to analyze stability conditions using appropriate criterias.
ECC305.5	Students will be able to evaluate transient and steady state error parameters of a system for different standard test signal.
ECC305.6	Students will be able to create models of different systems or instruments through simulation and analyze different parameters.

Course Name:	Electronic Devices and		
Course Code	ECL301		
Faculty Name:	Lakshmi Vinayakvitthal		
Year	2	Sem	III

CO Number	Course Outcome
ECL301.1	Students will be able to acquire a basic knowledge of working of various equipments , identifying various components and mounting the components on breadboard.
ECL301.2	Students will be able to understand working of rectifier with filter circuits and regulators and will be able to obtain the output waveforms and determine the performance parameters and compare with the theoritical value.
ECL301.3	Students will be able to understand the working of small signal amplifiers and obtain its transfer and output characteristics and determine the parameters graphically.
ECL301.4	Students will be able to obtain the frequency response of single stage amplifiers and determine the small signal volatge gain and determine the bandwith.
ECL301.5	Students will be able to apply the concept of stabilty factor and analyse various biasing circuits of BJT and JFET
ECL301.6	Students will be able to design and develop an application based on analog circuits, for a given specification

Course Name:	Digital System Design Lab		
Course Code	ECL302		
Faculty Name:	Madhavi Pednekar		
Year	2	Sem	III

CO Number	Course Outcome
ECL302.1	Students will be able to verify the truth tables of the logic gate ICs using DMM and LEDs.
ECL302.2	Students will be able to reduce, implement and verify the logical expressions using logic gate ICs.
ECL302.3	Students will be able to construct various combinational logic circuits using logic gates.
ECL302.4	Students will be able to design and implement various combinational and sequential logical circuits using digital ICs using the breadboard.
ECL302.5	Students will be able to verify various combinational and sequential logical operations using digital ICs and VHDL software.
ECL302.6	Students will be able to demonstrate their design and thinking ability by implementing mini project based on the taught course.

Course Name:	OOP using Java Laboratory		
Course Code	ECL303		
Faculty Name:	Shafaque Fatma Syed		
Year	2	Sem	III

CO Number	
ECL303.1	Define and Describe concepts and underlying principles of object-oriented Programming
ECL303.2	Understand and Explain fundamentals of java constructs
ECL303.3	Use object oriented programming using Java and associated libraries to develop simple java programs
ECL303.4	Demonstrate programs on methods, arrays, constructors and destructors
ECL303.5	Develop programs on advanced concepts in java like Inheritance, Interfaces and Packages
ECL303.6	Apply concepts of Multi-threading and Applets to Develop java programs

Course Name:	MPI		
Course Code	ECC501		
Faculty Name:	Yogesh Gholap		
Year	3	Sem	V

CO Number	Course Outcome
ECC501.1	Student will know basic features, architecture and pin configuration of 8086 microprocessor.
ECC501.2	Student will be able to demonstrate understanding of memory organization, instruction set through basic programs in assembly language.
ECC501.3	Student will be able to interface and program peripheral devices
ECC501.4	Students will analyse data transfer model of microprocessor ad demonstrate knowledge of working of 8086 via simulation.
ECC501.5	Student will be able to chose appropriate peripheral devices for given system requirements
ECC501.6	Student will be able to design microprocessor based system for various application

Course Name:	Digital Communications
Course Code	ECC502
Faculty Name:	Namita Agarwal
Year	3

CO Number	Course Outcome
ECC502.1	Students will be able to define and describe the basic concepts of probability theory,Random Variables and random processes along with information theory as applied to modern communication systems.
ECC502.2	Students will be able to understand and explain the methods of baseband and bandpass modulation and demodulation.
ECC502.3	Students will be able to apply the concepts of Information Theory in source coding and channel coding.
ECC502.4	Students will be able to analyze the performance of different waveform techniques for generation of digital representation of signals and evaluate the methods to eliminate Inter-Symbol Interference.
ECC502.5	Students will be able to analyze and compare the performance of various digital modulation techniques.
ECC502.6	Students will be able to formulate and design error control systems for reliable communication.

Course Name:	ELECTROMAGNETIC ENGG.
Course Code	ECC503
Faculty Name:	Ashwini Kotrashetti
Year	3

CO Number	Course Outcome
ECC503.1	Students will have comprehensive knowledge relating to electrostatics, magnetostatics, and time varying EM fields in freespace or bounded medium and transmission lines.
ECC503.2	Students will have understanding of formulation of Maxwell's equation forming the basic concepts of electromagnetics.
ECC503.3	Students will develop an ability to apply theoretical concepts to solve problems so as to apply fundamental concepts such as Maxwell's Equations to solve the spatial and temporal distributions of E & H fields in various media.
ECC503.4	Students will develop an ability to identify, analyze and formulate fundamental concepts in realistic electrostatic and electromagnetic-fields utilizing mathematical tools and physical understanding of boundary-value problems, electromagnetic potentials, electromagnetic-field theorems based on Maxwell's equation and uniform plane waves.
ECC503.5	Students will be able to evaluate transmission line parameters by applying concepts of electromagnetics and using smth charts.
ECC503.6	Students will conduct preliminary research on applications of electromagnetics and work in teams to present their findings.

Course Name:	Discrete Time Signal Processing		
Course Code	ECC504		
Faculty Name:	Dr. Satishkumar Chavan		
Year	3	Sem	V

CO Number	Course Outcome
ECC504.1	Students will be able to know the discrete time signals, systems and DSP processors along with their various properties.
ECC504.2	Students will be able to understand the concepts of various tools to be used in analysis of discrete time systems.
ECC504.3	Students will be able to compute various parameters of discrete time systems and processors.
ECC504.4	Students will be able to analyze the discrete time systems and processors for measuring the performance of digital filters.
ECC504.5	Students will be able to evaluate the discrete time systems and processors for its better utilization in various applications.
ECC504.6	Students will be able to design the discrete time systems for effective use in various applications.

Course Name:	MICROELECTRONICS		
Course Code	ECCDLO 5011		
Faculty Name:	DR MANDE		
Year	3	Sem	V

CO Number	Course Outcome
DLO5011.1	Student will be able to know various processes for used for the fabrication of Integrated Circuits.(Knowing)
DLO5011.2	Students will be able to explain working of MOSFET based ciruits used in fabrication of Integrated circuits. (Understanding)
DLO5011.3	Students will be able to derive expressions for the various device as well as circuit performance under various conditions. (Applying)
DLO5011.4	Students will be able analyze impact of various ciruit and process parameters on Integrated Circuit Performance. (Analyzing)
DLO5011.5	Students will be identify the best process, circuit configurations for the specific applications. (Evaluating)
DLO5011.6	Students will be able design analog circuits for given specifications.(Desigining)

Course Name:	DATA COMPRESSION AND		
Course Code	ECCDLO 5014		
Faculty Name:	Madhavi Pednekar		
Year	3	Sem	V

CO Number	Course Outcome
ECCDLO5014.1	Students will be able to define data compression and data encryption and to describe different types/algorithms of compression and encryption techniques with their applications in the areas of Telecommunication. (Remember)
ECCDLO5014.2	Students will be able to distinguish among various types of data compression and encryption techniques/algorithms for text, audio, image and video data types. (Understand)
ECCDLO5014.3	Students will be able to solve numerical based on various methods of Data Compression Techniques, Number Theory and cryptography. (Apply)
ECCDLO5014.4	Students will be able to explain all the key aspects of different System Security and compare it based on its performance parameters. (Apply)
ECCDLO5014.5	Students will be able to compare the results of various methods of Data Compression and data security techniques based on their performance parameters. (Analyze)
ECCDLO5014.6	Students will be able to do present and document Case Studies based on the applications wherein encryption techniques, network security issues related to Email, PGP, S/MIME, Intrusion Detection System and solutions are discussed.(Evaluate)

Course Name:	MPI LAB		
Course Code	ECL 501		
Faculty Name:	YOGESH G		
Year	3	Sem	V

CO Number	Course Outcome
ECC501.1	Student will know basic features, architecture and pin configuration of 8086 microprocessor.
ECC501.2	Student will be able to demonstrate understanding of memory organization, instruction set through basic programs in assembly language.
ECC501.3	Student will be able to interface and program peripheral devices
ECC501.4	Students will analyse data transfer model of microprocessor ad demonstrate knowledge of working of 8086 via simulation.
ECC501.5	Student will be able to chose appropriate peripheral devices for given system requirements
ECC501.6	Student will be able to design microprocessor based system for various application

Course Name:	DCOM LAB		
Course Code	ECL 502		
Faculty Name:	Namita Agarwal		
Year	3	Sem	V

CO Number	Course Outcome
ECL 502.1	Students will understand basic concept of digital communication and explain the basic concepts of digital modulation techniques.
ECL 502.2	Students will be able to experimentally demonstrate the different digital modulation techniques.
ECL 502.3	Students will be able to implement line coding methods using Scilab software.
ECL 502.4	Students will be able to simulate various coding techniques and analyze the simulation results.
ECL 502.5	Students will be able to collect, analyze and interpret data to form and support conclusions.
ECL 502.6	Students will be able to design source and channel codes as per specifications.

Course Name:	Bussiness Communication LAB		
Course Code	ECL503		
Faculty Name:	Sachin Sugave		
Year	3	Sem	V

CO Number	Course Outcome
ETS506.1	Identify issues related to society, health, safety and prepare a comprehensive report in a pre-specified format gathering information from primary and secondary sources using research tools and analyzing the collected information to recommend technological solution with due consideration to environment
ETS506.2	Evaluate the social situation, identify business opportunities, and propose business offers in the prescribed format
ETS506.3	Demonstrate conceptual awareness of interpersonal skills through the given activities
ETS506.4	Plan and execute a meeting with the help of agenda
ETS506.5	Identify and solve professional and ethical problems in the given sample business situations and demonstrate knowledge of table etiquette and a sense of presentability in terms of dressing and grooming.
ETS506.6	Prepare their employability through resume, presentation skills, group discussions and mock interviews.

Course Name:	Open Source Technologies for Communication		
Course Code	ECL504		
Faculty Name:	Ms. Lakshmi V		
Year	3	Sem	V

CO Number	Course Outcome
ECL504.1	The students will be able to use appropriate syntax of the open source tools like Scilab/Octave/Python/ Xilinx ISE webpack/ngspice/sequel for simulation and analysis of communication system.
ECL504.2	The students will be able to install open source software along with requisite packages to use it effectively for simulation and analysis of communication system.
ECL504.3	The students will be able to simulate and verify the functionality of given communication system.
ECL504.4	The students will be able to simulate and analyse the various parameters of the signal/communication system.
ECL504.5	The students will be able to choose the appropriate open source software tool for a given application for communication system.
ECL504.6	The students will be able to design and implement the communication system as per specification using any open source tool and measure its performance.

Course Name:	Data Compression & Encryption Lab		
Course Code	ECLDLO5014		
Faculty Name:	Madhavi Pednekar		
Year	3	Sem	V

CO Number	Course Outcome
ECLDLO5014.1	Students will be able to identify the best data compression and encryption methodology/algorithm based on their results.
ECLDLO5014.2	Students will be able to apply their theoretical knowledge of data compression and encryption techniques to do coding and write their algorithms.
ECLDLO5014.3	Students will be able to implement various methods of data compression and encryption using modern software tools like MATLAB, OurSecret, Axcrypt, Truecrypt etc.
ECLDLO5014.4	Students will be able to build a suitable compression technique for audio, image and video files using learned software tools.
ECLDLO5014.5	Students will be able to demonstrate their data coding skill, oral and written communication skill effectively for the tasks given to them.
ECLDLO5014.6	Students will perform any of the encryption techniques/ compression/ security technique as mini project using simulation technique/software.

Course Name:	MICROELECTRONICS Tutorial		
Course Code	ECLDLO5011		
Faculty Name:	Dr. Sudhakar Mande		
Year	3	Sem	V

CO Number	Course Outcome
DLO5011.1	Student will be able to know various processes for used for the fabrication of Integrated Circuits.(Knowing)
DLO5011.2	Students will be able to explain working of MOSFET based ciruits used in fabrication of Integrated circuits. (Understanding)
DLO5011.3	Students will be able to derive expressions for the various device as well as circuit performance under various conditions. (Applying)
DLO5011.4	Students will be able analyze impact of various ciruit and process parameters on Integrated Circuit Performance. (Analyzing)
DLO5011.5	Students will be identify the best process, circuit configurations for the specific applications. (Evaluating)
DLO5011.6	Students will be able design analog circuits for given specifications.(Desigining)

Course Name:	Mobile Communication System		
Course Code	ECC702		
Faculty Name:	Aparna T		
Year	4	Sem	VII

CO Number	Course Outcome
ECC702.1	Students will able to understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided
ECC702.2	Students will compare the 1G,2G,3G,4G with respect to data rate, frame structure, modulation schemed used, advantages and limitations
ECC702.3	Identify the emerging technologies for upcoming mobile communication systems.
ECC702.4	Students will able to evaluate and analyze various propagation path loss models and there impact on received signal strength.
ECC702.5	Students will able to simulate live wireless networks and analyze the simulation results
ECC702.6	Students will able to design a cellular network which will take care of trade off between capacity and signal to Interference ratio

Course Name:	Optical Communication		
Course Code	ECC703		
Faculty Name:	POONAM C		
Year	4	Sem	VII

CO Number	Course Outcome
ECC703.1	The students should be able to describe the various theories and principles used in optical transmission using the Ray and waveguide transmission theory.
ECC703.2	The students will be able to explain principles and characteristics of various types of fibers, sources, detectors ,various fiber optic components , various methods used in fiber fabrication and losses in fiber
ECC703.3	The students should be able to apply various theories of fiber optics for selecting the right component in the fiber optics network design for improving the receiver performance.
ECC703.4	The students will be able to classify and analyze the various kinds of fibers, optical sources and detectors and other components based on their electrical specifications, characteristics and requirements and will be able to analyze the link.
ECC703.5	The students should be able to evaluate various fiber parameters, number of modes, losses, quantum efficiency , bit error rate , non linearity and the link power budget and rise time budget for any given fiber link
ECC703.6	The students should be able to design a optical fiber communication links using appropriate components for any topographical scenario.

Course Name:	Microwave Engineering		
Course Code	ECC701		
Faculty Name:	Freda Carvalho		
Year	4	Sem	VII

CO Number	Course Outcome
ECC701.1	Students will have comprehensive knowledge and skills associated to Microwave passive, active components and Microwave integrated circuits
ECC701.2	Students will develop a capacity to write and explain the theoretical concepts related to Microwave passive & active components.
ECC701.3	Students will develop the ability to apply knowledge to solve problems and derive equations on working of microwave devices . They will be able to utilise the principles of microwave engineering towards solving problems of microstrip, coupled lines and strip lines.
ECC701.4	Students will develop the ability to analyse the working of matching networks and modes of waveguides, striplines, microstriplines and coupled lines
ECC701.5	Students will be able to evaluate the specifications to design of microwave devices. They will be able to compare and recommend a suitable device for the given application or measurement.
ECC701.6	Students will design a network of a microwave subsystem for the given required specification.

Course Name:	CMOS MIXED SIGNAL VLSI		
Course Code	ECCDLO7034		
Faculty Name:	Dr. Sudhakar Mande		
Year	4	Sem	VII

CO Number	Course Outcome
ECCDLO7034.1	Students will know various building blocks used in mixed signal VLSI circuits
ECCDLO7034.2	Students will be able to explain functionality of various basic building blocks used in Mixed Signal VLSI circuits
ECCDLO7034.3	Students will be able to derive expression for various performance parameters of mixed signal circuits
ECCDLO7034.4	Students will be able to analyze performance of mixed signal VLSI circuits
ECCDLO7034.5	Students will be able to choose appropriate circuit to obtain optimize performance of mixed signal circuits
ECCDLO7034.6	Students will be able to design mixed signal circuit for given specifications

Course Name:	BIG DATA ANALYTICS-ELECTIVE		
Course Code	ECCDLO7032		
Faculty Name:	JITHIN ISAAC		
Year	4	Sem	VII

CO Number	Course Outcome
ECCDLO7032.1	Identify challenges in big data management and inadequacy of existing technology to analyze big data.
ECCDLO7032.2	Apply scalable algorithms based on Hadoop and Map Reduce to perform Big Data Analytics.
ECCDLO7032.3	Use NoSQL tools to solve big data problems and apply various techniques for finding similar items in any application.
ECCDLO7032.4	Use stream data model to provide real time analysis of big data.
ECCDLO7032.5	Apply various methods and techniques for Clustering, fequent Itemsets and Link Analysis.
ECCDLO7032.6	Discover information from social network graphs and Solve complex real world problems in various apllications.

Course Name:	Embedded System		
Course Code	ECCDLO7035		
Faculty Name:	Mr. Yogesh Golap		
Year	4	Sem	VII

ECCDLO7035.1	Understand the detailed processor design techniques and methods of communication.
ECCDLO7035.2	Study the in-depth program modelling concepts.
ECCDLO7035.3	Study the concepts of Real time operating systems and write programs
ECCDLO7035.4	Students will analyse various scheduling algorithms used in RTOS.
ECCDLO7035.5	Student will be able to chose appropriate RTOS for given system requirements
ECCDLO7035.6	Design embedded system applications using RTOS

Course Name:	Mobile Communication LAB		
Course Code	ECL702		
Faculty Name:	Aparna M. Telgote		
Year	4	Sem	VII

CO Number	Course Outcome
ECL702.1	Students will be able to find SAR value and various wireless technologies supported by the mobile and will understand generations of mobile phones
ECL702.2	Students will be able to understand performance charecteristics of mobile communication(Frequency Reuse)
ECL702.3	Students will be able to generate code , and design basic CDMA Transreciver System
ECL702.4	Students will be able to apply various path loss models (Free space/Indoor propagation model) to find path loss and calculate recceived signal strength, and covarge distance for different (urban, suburban and rural) environment
ECL702.5	Students will be able to analyse live network of 2G and 3G and HSDPA network
ECL702.6	Students will be able to evaluate performance of a cellular system for different environment by considering the effect of Cluster Size, traffic intensity, Signal to Interference ratio.

Course Name:	Microwave Engineering Laboratory		
Course Code	ECL701		
Faculty Name:	Freda Carvalho		
Year	4	Sem	VII

CO Number	Course Outcome
ECL 701.1:	Students will have basic knowledge and skills related to Microwave passive & active components and will be able to measure various microwave parameter.
ECL 701.2	Students will be able to apply their theoretical knowledge and demonstrate proficiency to operate various instruments to measure and analyze various microwave parameters.
ECL 701.3	Students will be able to apply their knowledge and skills to perform measurements of various microwave parameters
ECL 701.4	Student will be able to demonstrate his/her proficiency in the subject by taking up a socially relevant topic for discussion.
ECL 701.5	Student will be able to evaluate the given problem and choose appropriate methods and tools to obtain results.
ECL 703.6	Students will be able to design/simulate and evaluate the behaviour of microwave circuits

Course Name:	Optical Communication lab		
Course Code	ECL703		
Faculty Name:	Poonam Chakraborty		
Year	4	Sem	VII

CO Number	Course Outcome
ECL703.1	Students will have comprehensive knowledge and skills relating to Fiber components and fiber transmissions
ECL703.2	The students will have the understanding of the principle of Rays Optics (for fiber optics communication) and using these principles will be able to transmit a
ECL 703.3	Students will be able to apply various measuring techniques for finding attenuation coefficient, numerical aperture a, responsivity of the fiber.
ECL703.4	The students will be able to evaluate various parameters of the fiber cable like bending loss , attenuation loss and Numerical Aperture for the given fiber cable
ECL703.5	The students will be able to analyze and plot various characteristic of the fiber source(LED's) and Photodetector
ECl703.6	The students will be able to design a fiber point to point link for a given scenario. They will be able to propose solution for sustainable technology related to fiber optics

Course Name:	CMOS MIXED SIGNAL VLSI LAB		
Course Code	ECLDLO7034		
Faculty Name:	Dr. Mande		
Year	4	Sem	VII

CO Number	Course Outcome
ECLDLO7034.1	Students will be able to write NGSpice code for given circuit
ECLDLO7034.2	Students will be able to perform various types of analysis like operating point, dc, and so on using NGSpice
ECLDLO7034.3	Students will be able to relate performance with various circuit paramters
ECLDLO7034.4	Students will be able to verify functionality as well as performance of given mixed signal VLSI circuit

Course Name:	BIG DATA ANALYTICS LABORATORY		
Course Code	ECLDLO7032		
Faculty Name:	JITHIN ISAAC		
Year	4	Sem	VII

CO Number	Course Outcome
ECLDLO7032.1	Students will learn the core components of a Hadoop ecosystem, Install Hadoop components and perform basic HDFS operations
ECLDLO7032.2	Students will learn to query the Hadoop HDFS using basic MapReduce algorithsm. They will implement basic algorithms in MapRecue for Matrix multiplication and Aggregation.
ECLDLO7032.3	Students will learn the NoSQL data architecture using MongoDB & InfluxDB and learn programming exercises for quering the NoSQL database
ECLDLO7032.4	Students will learn to install Hive & Pig for Data Analysis
ECLDLO7032.5	Students will learn NodeRed for learning about JSON semi structured data
ECLDLO7032.6	Students will learn basic Python coding for Data Analysis

Course Name:	Embedded System		
Course Code	ECLDLO7035		
Faculty Name:	Mr. Yogesh Golap		
Year	4	Sem	VII

CO Number	Course Outcome
ECLDLO7035.1	Understand the detailed processor design techniques and methods of communication.
ECLDLO7035.2	Study the in-depth program modelling concepts.
ECLDLO7035.3	Study the concepts of Real time operating systems and write programs
ECLDLO7035.4	Students will analyse various scheduling algorithms used in RTOS.
ECLDLO7035.5	Student will be able to chose appropriate RTOS for given system requirements
ECLDLO7035.6	Design embedded system applications using RTOS

Course Name:	Project Stage-I		
Course Code	ETP701		
Faculty name	Khan Naheed Anjum		
Year	4	Sem	VII

CO Number	Course Outcome
ETP701.1	Students will be able to identify the domain area of their project and also the Industrial/sociall/health/safety/legal/environment aspects.
ETP701.2	Students will be able to apply appropriate research methodologies & design techniques to provide solutions that meet specified needs with consideration for public health, safety & welfare, global cultural, social, environmental and economic factors.
ETP701.3	Students will be able to develop & conduct appropriate experimentation, analyze/ synthesize and interpret data using modern tools to draw valid conclusions.
ETP701.4	Students will be able to function effectively as a team, plan tasks, establish goals and meet objectives.
ETP701.5	Students will be able to demonstrate ethical and professional responsibilities.
ETP701.6	Students will be able to communicate effectively their work through technical reports and presentations.