DON BOSCO INSTITUTE OF TECHONOLGY, KURLA, MUMBAI

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

CAY- (Odd semester, 2018-19)

Course Name:	BEE	
Course Code	FEC105	
Faculty Name:	Gejo, Anjum, Freda	
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 - III	
Course Code	ETS301	
Faculty Name:	SATYANARAYAN	
Year	2	Sem	III

CO Number	Course Outcome
ECC301.1	Students will be able to (i) Obtain Laplace Transforms for a given standard function of 't', (ii) Obtain Inverse Laplace Transforms for a given simple function of 's' (iii) Define harmonic functions and Orthogonal trajectories (iv) Define vector and scalar products of 3 and 4 vectors (ii) Identify orthogonal and orthonormal functions and obtain Fourier series, half-range Fourier series and Fourier sine and cosine series of periodic functions.
ECC301.2	Students will be able to (i) Obtain the Laplace Transforms, Inverse Laplace Transforms of combinations of standard functions using the properties of Laplace and Inverse Transforms. (iii) Obtain complex form fourier series of functions. (iv) Find Cauchy – Riemann equations to verify if a function is analytic
ECC301.3	Students will be able to (i) Apply Laplace and Inverse Laplace transform concepts to evaluate integrals, solve initial and boundary value problems. (i) Apply Laplace and Inverse Laplace transform concepts to evaluate integrals, solve initial and boundary value problems. (ii) Obtain the image under given transformations (iii) Develop orthonormal functions from a set of orthogonal functions (iv) Obtain Fourier series for even and odd functions (v) Obtain Fourier transforms of functions (vi) Define trigonometric functions in terms of Bessel's functions (vii) Evaluate integrals using Green's theorem, Stoke's theorem and Gauss Divergence theorems

Course Name:	EDC-1	
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 and JFET, rectifier and filter circuits 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 for rectifiers , filters and small signal amplifiers.
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 rectifier circuits with filter and single stage small signal amplifiers using BJT and JFET for a given specification and application

Course Name:	Digital System Design	
Course Code	ECC303	
Faculty Name:	APARNA T	
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:	Circuit Theory & Network	
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:	Electronic Instrumentation and Control	
Course Code	ECC305	
Faculty Name:	YOGESH G	
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.Student 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	Student will be able to analyze system using different technique such as Root locus, Bode plot, polar plot etc in frequency domain.
ECC305.5	Student will be able to Evaluate transient and steady state error parameters of a system for different standard test signals.

Course Name:	Electronic Devices and Circuits Lab		
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:	APARNA ASHWINI		
Year	2	Sem	III
CO Number	Course Outcome		
ECL302.1	Student will be able to implement and verify concepts and operation of digital cicuits and ICs.		
ECL302.2	Student will be able to analyze performance of given combinational and sequential circuit experimentally.		
ECL302.3	Student will be able to evaluate , select and implement appropriate combinational or sequential circuits for given specification.		
ECL302.4	Student will be able to implement Digital circuits using VHDL programming		

Course Name:	OOP using Java Laboratory		
Course Code	ECL303		
Faculty Name:	Shafaque Fatma Syed		
Year	2	Sem	III
CO Number	Course Outcome		
ECL303.1	Understand the concept and underlying principles of object-oriented Programming and differentiate between structured oriented programming and object oriented programming.		
ECL303.2	Ability to use object oriented programming using Java and associated libraries to develop simple programs.		
ECL303.3	Ability to demonstrate programs on methods, arrays, strings, inheritance, constructors and destructors.		
ECL303.4	Ability to apply concepts of interface, package, multi-threading and applet using java constructs to design 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 8051 and ARM7 microcontroller.
ECC501.2	Student will be able to demonstrate understanding of memory organization, I/O ports, counter/ timer, interrupts, UART of microcontroller.
ECC501.3	Student will be able to apply knowledge of instruction set to write assembly language program for given logic.
ECC501.4	Student will be able to interface and program peripheral devices LED, LCD, and seven segment display,Keyboard,ADC and DAC (0808/09),Stepper motor and relay, IR sensor with 8051 and ARM7 microcontroller.
ECC501.5	Student will be able to design microcontroller 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 Remember 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. They will also be able to compare the performance of various digital modulation and error control techniques.
ECC502.5	Students will be able to evaluate the performance of source coding and channel coding 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:	DTSP	
Course Code	ECC504	
Faculty Name:	JITHIN	
Year	3	Sem	V

CO Number	Course Outcome
ECC504.1	The student will be able to learn the basic concepts of digital signal processing after having learnt the basics of signals & systems in their earlier semesters.
ECC504.2	The student will be able to describe and identify different types of filters and DSP processors used in discrete time signal processing.
ECC504.3	The student will be able to apply the signal processing algorithms & techniques for obtaining the DFT, Convolution & Transfer function of digital filters.
ECC504.4	The student will be able to analyze the effect of changing the filter specifications on the stability, finite world length errors and output characteristics of an digital input signal.
ECC504.5	The student will be able to judge, evaluate and select the correct processor and filter design for signal processing applications.
ECC504.6	The students will be able to code & simulate the working of digital filters for real time signal processing applications using the Python programming language.

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

CO Number	Course Outcome
ECCDLO5011.1	Student will be able to know various processes for used for the fabrication of Integrated Circuits.(Knowing)
ECCDLO5011.2	Students will be able to explain working of MOSFET based ciruits used in fabrication of Integrated circuits. (Understanding)
ECCDLO5011.3	Students will be able to derive expressions for the various device as well as circuit performance under various conditions. (Applying)
ECCDLO5011.4	Students will be able analyze impact of various ciruit and process parameters on Integrated Circuit Performance. (Analyzing)
ECCDLO5011.5	Students will be identify the best process, circuit configurations for the specific applications. (Evaluating)
ECCDLO5011.6	Students will be able design analog circuits for given specifications.(Desigining)

Course Name:	TV AND VIDEO ENGG	
Course Code	ECCDLO 5012	
Faculty Name:	POONAM C	
Year	3	Sem	V

CO Number	Course Outcome
ECCDLO5012.1	The students will be able to identify the basic concepts of monochome/colour TV, overview of TV systems, camera tubes.
ECCDLO5012.2	The students will be able to identify the basic concepts of video compression techniques and various standards of broadcasting.
ECCDLO5012.3	he students will be able to explain and compare the working of TV transmitter and receiver, NTSC and PAL encoder / decoder, camera tubes, displays.
ECCDLO5012.4	The students will be able to identify the various digital compression techniques, digital video broadcasting standards and advanced digital systems.
ECCDLO5012.5	The students will analyze various video compression standards, various digital video broadcasting standards and display devices.
ECCDLO5012.6	The students will be able to compare and select amongst: various displays, streaming media devices, broadcasting standards, various adavanced digital systems.

Course Name:	DATA COMPRESSION AND ENCRYPTION		
Course Code	ECCDLO 5014		
Faculty Name:	MADHAVI P		
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
ETC501.1	Student will know basic features, architecture and pin configuration of 8051 and ARM7 microcontroller.
ETC501.2	Student will be able to demonstrate understanding of memory organization, I/O ports, counter/ timer, interrupts, UART of microcontroller.
ETC501.3	Student will be able to apply knowledge of instruction set to write assembly language program for given logic.
ETC501.4	Student will be able to interface and program peripheral devices LED, LCD, and seven segment display,Keyboard,ADC and DAC (0808/09),Stepper motor and relay, IR sensor with 8051 and ARM7 microcontroller.
ETC501.5	Student will be able to design microcontroller 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 error control 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, build, and assemble a system using specific methodologies.

Course Name:	Bussiness Communication LAB		
Course Code	ECL503		
Faculty Name:	Vishal Bodale		
Year	3	Sem	V

CO Number	Course Outcome
ECL503.1	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 and society through a well defined process
ECL503.2	Evaluate the social situation, identify business opportunities, and propose business offers in the prescribed format
ECL503.3	Demonstrate conceptual awareness of interpersonal skills through the given activities
ECL503.4	Plan and execute a meeting with the help of agenda
ECL503.5	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.
ECL503.6	Prepare their employability through resume, presentation skills, group discussions and mock interviews.

Course Name:	OSTCL LAB		
Course Code	ECL504		
Faculty Name:	Lakshmi V		
Year	3	Sem	V

CO Number	Course Outcome
ECL504.1	Students will have the understanding of various open source tools and will learn and acquire the skills to use the simulation tools for obatining engineering solution.
ECL504.2	Students will be able to learn and perform installation of atleast one of the open source tools.
ECL504.3	Students will be able to simulate and analyse various digital circuits using any of the open source tools
ECL504.4	Students will be able to simulate and analyse various signals and communication systems usig any of the open source tools
ECL504.5	Students will be able to simulate and/ design various analog circuits and compare the performance parameters with the theorical values.
ECL504.6	Students will be able to design and simulate a system for a given specification and application.

Course Name:	Data Compression & Encryption(Elective)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 MANDE		
Year	3	Sem	V

CO Number	Course Outcome
ECLDLO5011.1	Student will be able to know various processes for used for the fabrication of Integrated Circuits.(Knowing)
ECLDLO5011.2	Students will be able to explain working of MOSFET based ciruits used in fabrication of Integrated circuits. (Understanding)
ECLDLO5011.3	Students will be able to derive expressions for the various device as well as circuit performance under various conditions. (Applying)
ECLDLO5011.4	Students will be able analyze impact of various ciruit and process parameters on Integrated Circuit Performance. (Analyzing)
ECLDLO5011.5	Students will be identify the best process, circuit configurations for the specific applications. (Evaluating)
ECLDLO5011.6	Students will be able design analog circuits for given specifications.(Desigining)

Course Name:	TV AND VIDEO ENGG LAB		
Course Code	ECLDLO5014		
Faculty Name:	POONAM C		
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	IVP		
Course Code	ETC701		
Faculty Name:	Satishkumar Chavan		
Year	4	Sem	VII

CO Number	Course Outcome
ETC701.1	Students will be able to understand fundamental concepts of formation and sampling of image and video.
ETC701.2	Students will be able to improve the quality of an image or a video in spatial domain as well as in frequency domain.
ETC701.3	Students will be able to interpret and analyze images and videos in frequency domain.
ETC701.4	Students will be able to choose appropriate method to reconstruct original image from degraded image.

Course Name:	MCS		
Course Code	ETC702		
Faculty Name:	Aparna T		
Year	4	Sem	VII
CO Number	Course Outcome		
ETC702.1	Students will able to understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided		
ETC702.2	Students will compare the 1G,2G,3G,4G with respect to data rate, frame structure, modulation schemed used, advantages and limitations		
ETC702.3	Students will able to evaluate and analyze various propagation path loss models and there impact on received signal strength.		
ETC702.4	Students will able to design a cellular network which will take care of trade off between capacity and signal to Interference ratio		

Course Name:	OCN		
Course Code	ETC703		
Faculty Name:	POONAM C		
Year	4	Sem	VII
CO Number	Course Outcome		
ETC703.1	The students should be able to define and describe various theories and principles used in fiber optics communication ,fiber sources and detectors , network components and network management.		
ETC703.2	The students should be able to explain various methods involved in fiber fabrication , various types of components, various losses, network architectures and concept of network design.		
ETC703.3	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 , fault management and protection.		
ETC703.4	The students should be able to analyze various types of fibers based on their transmission characteristics, fiber losses, optical network system components , types of optical networks , various multiplexing and de-multiplexing schemes , power penalty based on the given application.		
ETC703.5	The students should be able to evaualte 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.		
ETC703.6	The students should be able to design a optical fiber communication links using appropriate components for any topographical scenario.		

Course Name:	MRE		
Course Code	ETC704		
Faculty Name:	Freda Carvalho		
Year	4	Sem	VII
CO Number	Course Outcome		
ETC704.1	Students will have comprehensive knowledge and skills associated to Microwave passive & active components, radar fundamentals and types of radar.		
ETC704.2	Students will develop a capacity to write and explain the theoretical concepts related to Microwave passive & active components, radar fundamentals and types of radar.		
ETC704.3	Student will develop the ability to apply knowledge to solve problems and derive equations on working of microwave devices and radar		
ETC704.4	Students will develop the ability to examine the working of microwave devices and radar in order to determine their working, they will also enable them to select appropriate devices for given specifications		
ETC704.5	Students will be able to evaluate the working of microwave devices with regards to their bandwidth, operating frequency and power handling capability. They will be able to compare and recommend a suitable radar technology for the given application		
ETC704.6	Students will design a Radar /microwave subsystem architecture for the given required specification		

Course Name:	DCE ELECTIVE		
Course Code	ETE701		
Faculty Name:	Madhavi S. Pednekar		
Year	4	**Sem**	VII

CO Number	Course Outcome
ETE701.1	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.
ETE701.2	Students will be able to distinguish among various types of data compression and encryption techniques/algorithms for text, audio, image and video data types.
ETE701.3	Students will be able to solve numerical based on various methods of Data Compression Techniques, Number Theory and cryptography.
ETE701.4	Students will be able to compare the results of various methods of Data Compression and data security techniques based on their performance parameters.
ETE701.5	Students will be able to do present and document case studies based on the applications wherein encryption techniques, data and system security issues and solutions are discussed.
ETE701.6	Students will be able to plan group discussions on virus, worms, firewalls, biometric authentication and ethical issues in Cyber Security-Ethical Hacking. (Existing security policies and related standards.)

Course Name:	NNFL ELECTIVE		
Course Code	ETE 703		
Faculty Name:	Pratibha Dumane		
Year	4	**Sem**	VII

CO Number	Course Outcome
ETE703.1	Students will be able to define the various terms related to neural networks and fuzzy logic, fuzzy properties, fuzzy rules and fuzzy reasoning and also describe the neural network learning rules, their architectures.
ETE703.2	Students will be able to explain the different types of supervised and unsupervised learning neural networks, fuzzification & defuzzification methods, fuzzy inference systems.
ETE703.3	Students will be able to select a particular neural network for specified application and apply fuzzy logic for specific applications.
ETE703.4	Students will be able to apply the different algorithms for given specifications of neural networks and analyze their outputs and deduce fuzzy relations using fuzzy logic.
ETE703.5	The students will be able to evaluate the given neural network for specific input patterns and activation functions and determine the fuzzy membership functions and compositions.

Course Name:	AMS-VLSI Elective		
Course Code	ETE704		
Faculty Name:	DR. MANDE		
Year	4	**Sem**	VII

CO Number	Course Outcome
ETE704.1	Students will know operation of the various building blocks of analog and mixed signal VLSI circuits.
ETE704.2	Students will demonstrate the understanding of various building blocks and their use in designing of analog and mixed signal circuits
ETE704.3	Students will be able derive the expressions for various performance measures of analog and mixed signal circuits in terms of parameters of various building blocks used to build the circuit
ETE704.4	Students will be able to evaluate and relate performance of given circuit
ETE704.5	Students will be able to analyze, compare and select appropriate circuit/configuration for given applications
ETE704.6	Students able to design analog and mixed signal VLSI circuit for given applications.

Course Name:	IVP LAB	
Course Code	ETL701	
Faculty Name:	Satishkumar S. Chavan	
Year	4	**Sem** VII

CO Number	Course Outcome
ETL701.1	Students will be able to understand program construct for image and video processing
ETL701.2	Students will be able to analyze images and videos.
ETL701.3	Students will be able to improve subjective quality of image and video in spatial domain and frerquency domain.
ETL701.4	Students will be able to choose appropriate filter to remove noise.

Course Name:	ACEL-I LAB	
Course Code	ETL702	
Faculty Name:	Aparna M. Telgote	
Year	4	**Sem** VII

CO Number	Course Outcome
ETL702.1	Students will be able to understand performance charecteristics of mobile communication : GSM and CDMA(IS-95), e.g(frequency reuse, Signal to Interference ratio,PN Sequence code, Implementation of CDMA)
ETL702.2	Students will be able to evaluate and analyze various path loss models (Free space/ Outdoor/Indoor propagation model) for different (urban, suburban and rural) environment
ETL702.3	Students will be able to analyse live network of 2G and 3G
ETL702.4	Students will be able to design a cellular system for different environment by considering the effect of Cluster Size, traffic intensity, Signal to Interference ratio.

Course Name:	ACELI-II LAB	
Course Code	ETL 703	
Faculty Name:	POONAM C & Freda Carvalho	
Year	4	**Sem** VII

CO Number	Course Outcome
ETL 703.1:	Students will have comprehensive knowledge and skills relating to Microwave passive & active components, radar fundamentals and types.
ETL 703.2	The students will have the understanding of the principle of Rays Optics (for fiber optics communication) and using these priciples will be able to transmit and receive an analog and digital signal using fiber optics communication.
ETL 703.3	Students will be able to apply various microwave measuring techniques for finding microwave frequency of the given source, unknown impedance, VSWR, various loss parameters.
ETL 703.4	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. They will be able to find out various microwave measurement parameters like unknown impedance of the given device , VSWR , return loss
ETL 703.5	The students will be able to analyze and plot various characteristic of the fiber source(LED's) and Photodetector and also using schmit chart for microwave measurements.
ETL 703.6	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 microwave and fiber optics

Course Name:	DCE Elective LAB		
Course Code	ETEL701		
Faculty Name:	Madhavi S. Pednekar		
Year	4	Sem	VII
CO Number	Course Outcome		
ETEL701.1	Students will be able to understand the best data compression and encryption methodology/algorithm based on their results.		
ETEL701.2	Students will be able to apply their theoretical knowledge of data compression and encryption techniques to write the algorithms.		
ETEL701.3	Students will be able to write the code for data compression and encryption algorithms and implement using MATLAB.		
ETEL701.4	Students will be able to write the code for data compression and encryption algorithms and implement using MATLAB.		
ETEL701.5	Students will be able to develop coding skills and show their oral and written communication ability effectively for the task given to them in the laboratory.		

Course Name:	NNFL elective LAB		
Course Code	ETEL 703		
Faculty Name:	Pratibha Dumane		
Year	4	Sem	VII
CO Number	Course Outcome		
ETL703.1	Students will be able to program in Matlab for generating activation functions, logic functions and also apply the different learning rules related to neural networks.		
ETL703.2	Students will be able to write a code for performing operations using fuzzy logic and fuzzy sets.		
ETL703.3	Students will be able to develop a fuzzy logic system for any real application.		

Course Name:	ADVANCED VLSI ELECTIVE LAB		
Course Code	ETL704		
Faculty Name:	DR. MANDE		
Year	4	Sem	VII
CO Number	Course Outcome		
ETL704.1	Student will be able write spice code for given circuit.		
ETL704.2	Student will be able to perform operating point analysis, dc analysis, transient analysis, ac analysis, noise analyis of a given circuit using Ngspice		
ETL704.3	Student will be able to compare simulation results with theoretical results(hand calculation) to verify functionality and perfromance of given circuit.		

Course Name:	Project Stage-I		
Course Code	ETP701		
Faculty name	Jithin Isaac		
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/social/health /safety/legal/environmental aspects related to the project.		
ETP701.2	Students will be able to apply Scientific, Engineering & Mathematical knowledge to plan, schedule, execute and monitor their project activities and also prepare the estimated budget required for the same.		
ETP701.3	Students will be able to demonstrate team work and team spirit and overcome conflict		
ETP701.4	Students will be able to demonstrate ethical issues related to the project.		
ETP701.5	Students will be able to communicate effectively their project ideas, literature summary and project design through reports and presentations.		