Wayanamac Education Test ®
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Department of CSE (Artificial Intelligence & Machine Learning)

VISION

Empower the students to be socially responsible technocrats in the area of Artificial Intelligence and Machine Learning through quality education.

MISSION

- To provide the fundamental knowledge of Artificial Intelligence and Machine Learning domain and allied subjects.
- To establish the practical platform to solve problems and implement the projects.
- To provide inter disciplinary knowledge.
- To link with the industry in teaching learning process.

12/4/22
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R.L. Ramesh 11/4/22
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Department of CSE (Artificial Intelligence & Machine Learning)

1.1.3 PEOs

PEO_1 To provide students with a sound knowledge of science, mathematics, and engineering principles together with an in-depth disciplinary knowledge required to succeed in the profession of IT.

PEO_2 To provide students an academic environment with an awareness of advanced technological growth leading to life-long learning needed for a successful professional career, excellence, and leadership.

PEO_3 To train students with a wide scientific and engineering knowledge to comprehend, analyse design, and create innovative software solutions and products for the problems of real life.

PEO_4 To prepare students for graduate and postgraduate programmes and succeed in their career in the field of Artificial Intelligence and Machine Learning.

PEO_5 To empower students with effective communication skills, teamwork, a multidisciplinary approach, and an ability to relate engineering issues to the broader social context.

PEO_6 To inculcate in students professional and ethical attitude with a strong character to uphold the spiritual and cultural values.

1.1.4 POs

PO_1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

PO_2: Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO_3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO_4: Conduct Investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis, and interpretation of data, and synthesis of the information to provide valid conclusions.

PO_5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO_6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice.

PO_7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO_8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO_9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO_{10}: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO_{11}: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO_{12}: Lifelong learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

1.1.5 PSOs

PSO_1: Able to analyse the algorithms and identifying the implementation tools.

PSO_2: Able to design and implement the algorithms using programming languages and tools.

PSO_3: Select the hardware, controllers and software interfacing platform.

PSO_4: Implement real time projects using AI, RPA, ML and Big data.

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Course Outcome Definition

Semester : 3rd **AY: 2021-22**

Course Title : Transform Calculus, Fourier Series And Numerical Techniques
Course Code : 18MAT31

C201.1	Use Laplace transform and inverse Laplace transform in solving differential integral equation arising in network analysis, control systems and other fields of engineering.
C201.2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory
C201.3	Make use of Fourier transform and Z-transform to illustrate discrete continuous function arising in wave and heat propagation, signals and systems
C201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods
C201.5	Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis

Course Title : Data Structures and Applications **Course Code : 18CS32**

C202.1	Use different types of data structures, operations and algorithms
C202.2	Apply searching and sorting operations on files
C202.3	Use stack, Queue, Lists, Trees and Graphs in problem solving
C202.4	Implement all data structures in a high-level language for problem solving

Course Title : Analog and Digital Electronics **Course Code : 18CS33**

C203.1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp.
C203.2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.
C203.3	Simplify digital circuits using Karnaugh Map, and Quine-McClusky Methods
C203.4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types.
C203.5	Develop simple HDL programs

Course Title : Computer Organization **Course Code : 18CS34**

C204.1	Explain the basic organization of a computer system.
C204.2	Demonstrate functioning of different sub systems, such as processor ,Input / output, and memory.
C204.3	Illustrate hardwired control and micro programmed control, pipelining, embedded and other computing systems
C204.4	Design and analyse simple arithmetic and logical units.

Course Title : Software Engineering **Course Code : 18CS35**

C205.1	Design a software system, component, or process to meet desired needs within realistic constraints.
C205.2	Assess professional and ethical responsibility
C205.3	Function on multi-disciplinary teams
C205.4	Use the techniques, skills, and modern engineering tools necessary for engineering practice
C206.5	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems

Course Title : Discrete Mathematical Structures **Course Code : 18CS36**

C206.1	Use propositional and predicate logic in knowledge representation and truth verification
C206.2	Demonstrate the application of discrete structures in different fields of computer science
C206.3	Solve problems using recurrence relations and generating functions.
C206.4	Application of different mathematical proofs techniques in proving theorems in the courses
C206.5	Compare graphs, trees and their applications

Course Title : Analog and Digital Electronics Laboratory **Course Code : 18CSL37**

C207.1	Use appropriate design equations / methods to design the given circuit
C207.2	Examine and verify the design of both analog and digital circuits using simulators
C207.3	Make us of electronic components, ICs, instruments and tools for design and testing of circuits for the given the appropriate inputs
C207.4	Compile a laboratory journal which includes, aim, tool / instruments/software /components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings.

Course Title : Data Structures Laboratory **Course Code : 18CSL38**

C208.1	Analyze and Compare various linear and non-linear data structures
C208.2	Code, debug and demonstrate the working nature of different types of data structures and their applications
C208.3	Implement, analyze and evaluate the searching and sorting algorithms
C208.4	Choose the appropriate data structure for solving real world problems

Course Title : Constitution of India, Professional Ethics and Cyber Law
Course Code : 18CPH39

C209.1	Have constitutional knowledge and legal literacy
C209.2	Understand Engineering and professional ethics and responsibilities of Engineers
C209.3	Understand the cybercrime and cyber laws for cyber safety measures

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Department of CSE (Artificial Intelligence & Machine Learning)

Course Outcome Definition

Semester : IV **AY: 2021-22**

Course Title : Complex Analysis, Probability And Statistical Methods

Course Code : 18MAT41

C210.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
C210.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
C210.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
C210.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
C210.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

Course Title : Design and Analysis of Algorithms **Course Code : 18CS42**

C211.1	Describe computational solution to well known problems like searching, sorting etc.
C211.2	Estimate the computational complexity of different algorithms.
C211.3	Devise an algorithm using appropriate design strategies for problem solving.

Course Title : Operating Systems **Course Code : 18CS43**

C212.1	Demonstrate need for OS and different types of OS
C212.2	Apply suitable techniques for management of different resources
C213.3	Use processor, memory, storage and file system commands
C214.4	Realize the different concepts of OS in platform of usage through case studies

Course Title : Microcontroller and Embedded Systems **Course Code : 18CS44**

C213.1	Describe the architectural features and instructions of ARM microcontroller
C213.2	Apply the knowledge gained for Programming ARM for different applications
C213.3	Interface external devices and I/O with ARM microcontroller
C213.4	Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.
C213.5	Develop the hardware /software co-design and firmware design approaches. Demonstrate the need of real time operating system for embedded system applications .

Course Title : Object Oriented Concepts **Course Code : 18CS45**

C214.1	Explain the object-oriented concepts and JAVA.
C214.2	Develop computer programs to solve real world problems in Java.
C214.3	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings.

Course Title : Data Communication **Course Code : 18CS46**

C215.1	Explain the various components of data communication
C215.2	Explain the fundamentals of digital communication and switching
C215.3	Compare and contrast data link layer protocols
C215.4	Summarize IEEE 802.xx standards

Course Title : Design and Analysis of Algorithm Laboratory Course Code : 18CSL47

C216.1	Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)
C216.2	Implement a variety of algorithms such assorting, graph related, combinatorial, etc., in a high level language.
C216.3	Analyze and compare the performance of algorithms using language features.
C216.4	Apply and implement learned algorithm design techniques and data structures to solve real-world problems.

Course Title : Microcontroller and Embedded Systems Laboratory
Course Code : 18CSL48

C217.1	Develop and test program using ARM7TDMI/LPC2148
C217.2	Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler.

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DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
(NBA Accredited Department)
Academic Year 2021-22
COURSE OUTCOMES

3rd SEM 18-SCHEME				
Sl. No	Subject Name	Subject Code		Course Outcomes(COs)
1	TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES	18MAT31	CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral
				equation arising in network analysis, control systems and other fields of engineering
			CO2	Demonstrate Fourier series to study the behaviour of periodic functions and their
				applications in system communications, digital signal processing and field theory
			CO3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous
				functions arising in wave and heat propagation, signals and systems
			CO4	Solve first and second order ordinary differential equations arising in engineering
				problems using single step and multistep numerical methods
			CO5	Determine the extremals of functionals using calculus of variations and solve
				problems arising in dynamics of rigid bodies and vibrational analysis
2	NETWORK THEORY	18ECI32	CO1	Determine currents and voltages using source transformation/ source shifting/ mesh/ nodal analysis and reduce given
				network using star-delta transformation/source transformation/ source shifting
			CO2	Solve network problems by applying Superposition/ Reciprocity/ Thevenin's/ Norton's/ Maximum Power Transfer/
				Millman's Network Theorem and electrical laws to reduce circuit complexities and to arrive at feasible solutions
			CO3	Calculate current and voltages for the given circuit under transient conditions
			CO4	Apply Laplace transform to solve the given network
			CO5	Solve the given network using specified two port network parameter like Z or Y or T or h and understand the concept of resonance
			CO6	Understand the concept of resonance
3	ELECTRONIC DEVICES	18ECI33	CO1	Understand the principles of semiconductor Physics
			CO2	Analyze the Memory system, speed, size and cost. Demonstrate Computer Types,Functional Units and Basic Understand the principles and characteristics of different types of semiconductor devices
			CO3	Understand the fabrication process of semiconductor devices
			CO4	Utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems
4	DIGITAL SYSTEM DESIGN	18ECI34	CO1	Explain the concepts of combinational and sequential logic circuits
			CO2	Design the combinational logic circuits
			CO3	Design the sequential circuits using SR, JK, D, T flip-flops and Mealy & Moore machines
			CO4	Design applications of Combinational & Sequential Circuits

5	COMPUTER ORGANIZATION AND ARCHITECTURE	18ECE35	CO5	Explain the basic organization of a computer system
			CO6	Explain different ways of accessing an input / output device including interrupts
			CO7	Illustrate the organization of different types of semiconductor and other secondary storage memories
			CO8	Illustrate simple processor organization based on hardwired control and micro programmed control
6	POWER ELECTRONICS AND INSTRUMENTATION	18ECE36	CO1	Build and test circuits using power electronic devices
			CO2	Analyze and design controlled rectifier, DC to DC converters, DC to AC inverters and SMPS
			CO3	Define instrument errors
			CO4	Develop circuits for multirange Ammeters, Voltmeters and Bridges to measure passive components
			CO5	Describe the principle of operation of Digital instruments and PLCs physical parameters
			CO6	Use Instrumentation amplifier for measuring
7	ELECTRONICS DEVICES AND INSTRUMENTATION LABORATORY	18ECL37	CO1	Understand the characteristics of various electronic devices and measurement of parameters using logicgates
			CO2	Design and test simple electronic circuits comparators, multiplexers and demultiplexers
			CO3	Use of circuit simulation software for the implementation and characterization of electronic circuits and devices
8	DIGITAL SYSTEM DESIGN LABORATORY	18ECL38	CO1	Demonstrate the truth table of various expressions and combinational circuits using logicgates, using logicgates
			CO2	Design various combinational circuits such as adders, subtractors, comparators, multiplexers and demultiplexers
			CO3	Construct flips-flops, counters and shift registers
			CO4	Simulate Serial adder and Binary Multiplier

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
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COURSE OUTCOMES
Academic Year 2021-22

5TH SEM B.E(ACTIVE)				
Sl. No	SUBJECT NAME	Subject Code		Course Outcomes(CO)
1	TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP	18ES51	CO1	Understand the fundamental concepts of Management and Entrepreneurship and opportunities in order to setup a business
			CO2	Describe the functions of Managers, Entrepreneurs and their social responsibilities
			CO3	Understand the components in developing a business plan
			CO4	Appreciate about various sources of funding and institutions supporting entrepreneurs
2	DIGITAL SIGNAL PROCESSING	18EC53	CO1	Determine response of LTI systems using time domain and DFT techniques
			CO2	Compute DFT of real and complex discrete time signals
			CO3	Computation of DFT using FFT algorithms and linear filtering approach
			CO4	Design and realize FIR and IIR digital filters
			CO5	Understand the DSP processor architecture.
3	PRINCIPLES OF COMMUNICATION SYSTEMS	18EC55	CO1	Analyze and compute performance of AM and FM modulation in the presence of noise at the receiver.
			CO2	Analyze and compare performance of digital formatting processes with quantization noise.
			CO3	Multiplex digitally formatted signals at Transmitter and demultiplex the signals and reconstruct digitally formatted signals at the receiver.
			CO4	Design/Demonstrate the use of digital formatting in Multiplexers, Vocoders and Video transmission.
4	INFORMATION THEORY AND CODING	18EC54	CO1	Explain concept of Dependent & Independent Source, measure of information, Entropy, Rate of Information and Order of a source
			CO2	Represent the information using Shannon Encoding, Shannon Fano, Prefix and Huffman Encoding Algorithms
			CO3	Model the continuous and discrete communication channels using input, output and joint probabilities
			CO4	Determine a codeword comprising of the check bits computed using Linear Block codes, cyclic codes & convolutional codes
			CO5	Design the encoding and decoding circuits for Linear Block codes, cyclic codes, convolutional codes, BCH and Golay codes
5	ELECTROMAGNETIC WAVES	18EC56	CO1	Evaluate problems on electrostatic force, electric field due to point, linear, volume charges by applying conventional methods and charge as a volume
			CO2	Apply Gauss law to evaluate Electric fields due to different charge distributions and Volume Charge distribution by using Divergence Theorem
			CO3	Determine potential and energy with respect to point charge and capacitance using Laplace equation and Apply Biot-Savart's and Ampere's laws for evaluating Magnetic field for different current configurations
			CO4	Calculate magnetic force, potential energy, and Magnetization with respect to magnetic materials and voltage induced in electric circuits
			CO5	Apply Maxwell's equations for time varying fields, EM waves in free space and conductors and Evaluate power associated with EM waves using Poynting theorem

5	VERILOG HDL	18ECL56	CO1	Write Verilog programs at gate, dataflow (RTL), behavioral and switch-making levels of Abstraction
			CO2	Design and verify the functionality of digital circuit/system using test benches
			CO3	Identify the suitable Abstraction level for a particular digital design
			CO4	Write the programs more effectively using Verilog tasks, functions and directives
			CO5	Perform timing and delay Simulation
			CO6	Interpret the various constructs in logic synthesis
7	DIGITAL SIGNAL PROCESSING LABORATORY	18ECL57	CO1	Understand the concepts of analog to digital conversion of signals and frequency domain sampling of signals
			CO2	Modeling of discrete time signals and systems and verification of its properties and results
			CO3	Implementation of discrete computations using DSP processor and verify the results
			CO4	Realize the digital filters using a simulation tool and analyze the response of the filter for an audio signal
8	HDL LABORATORY	18ECL58	CO1	Write the Verilog/VHDL programs to simulate Combinational circuits in Dataflow, Behavioral and Gate level Abstractions
			CO2	Describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms
			CO3	Synthesize Combinational and Sequential circuits on programmable IC's and test the hardware
			CO4	Interface the hardware to the programmable chips and obtain the required output
9	ENVIRONMENTAL STUDIES	18CIV59	CO1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
			CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
			CO3	Demonstrate and sign knowledge of a complex relationship between biotic and a biotic components
			CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues

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COURSE OUTCOMES
Academic Year 2021-22

7TH SEMESTER				
Sl. No	SUBJECT NAME	Subject Code		Course Outcomes(CO)
1	COMPUTER NETWORKS	18EC71	CO1	Understand the concept of networking
			CO2	Identify the protocols and services of different layers
			CO3	Distinguish the basic network configurations and standards associated with each network
			CO4	Analyze a simple network and measure its parameter
2	VLSI DESIGN	18EC72	CO1	Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling
			CO2	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects
			CO3	Demonstrate ability to design Combinational, sequential and dynamic logic circuits as per the requirement
			CO4	Interpret Memory elements along with timing considerations
			CO5	Interpret testing and testability issues in VLSI Design
3	SATELLITE COMMUNICATION	18EC732	CO1	Ability to describe the satellite orbits and its trajectories with the definitions of parameters associated with it.
			CO2	Ability to classify the electronic hardware systems associated with the satellite subsystem and earth station.
			CO3	Ability to discuss the communication satellites with the focus on national satellite system
			CO4	Ability to compute the satellite link parameters under various propagation conditions with the illustration of multiple access techniques.
			CO5	Ability to Illustrate the satellites used for applications in remote sensing, weather forecasting and navigation
4	MULTIMEDIA COMMUNICATION	18EC742	CO1	Ability to understand basics of different multimedia networks and applications
			CO2	Ability to understand different compression techniques to compress audio and video
			CO3	Ability to describe multimedia Communication across Networks.
			CO4	Ability to Analyse different media types to represent them in digital form.
			CO5	Ability to Compress different types of text and images using different compression techniques.
5	ENERGY AND ENVIRONMENT	18HE751	CO1	Able to compare different form of energy sources and its availability
			CO2	Identify different energy storage systems and its management
			CO3	Understand the environment and different ecosystems
			CO4	Analyse the environment pollution along with social issues and acts

6	APYTHON APPLICATION PROGRAMMING	18CS752	CO1	Learn syntax and semantics and create functions in python
			CO2	Handle Strings and files in python
			CO3	Understand lists, dictionaries and regular expressions in python
			CO4	Implement object oriented concepts in python
			CO5	Build web services and handle database and network programs in python
7	ELECTRIC VEHICLES	18EE752	CO1	Ability to explain the working of electric vehicles and recent trends
			CO2	Ability to analyze different power converter topology used for electric vehicle applications
			CO3	Ability to develop the electric propulsion unit and its control for an application of electric vehicles
			CO4	Ability to design converters for battery charging and explain transformerless topology
8	COMPUTER NETWORKS LAB	18ECL76	CO1	Choose suitable tools to model a network.
			CO2	Use the network simulator for learning and practice of networking algorithms.
			CO3	Illustrate the operations of network protocols and algorithms using C programming
			CO4	Simulate the network with different configurations to measure the performance parameters
			CO5	Implement the data link and routing protocols using C programming
9	VLSI LABORATORY	18ECL77	CO1	Design and simulate combinational and sequential circuits using verilog HDL
			CO2	Understand the synthesis process of digital circuits using EDA tool
			CO3	Perform ASIC design flow and understand the process of synthesis, synthesis constraints and evaluating the synthesis reports to obtain optimum gate level net list
			CO4	Design and simulate basic CMOS circuits like inverter, common source two input NAND gate and differential amplifier
10	PROJECT WORK PHASE-1	18ECP78	CO1	Ability to analyze the problem, formulation and solution of the selected project
			CO2	Ability to develop solutions for contemporary problems using modern tools for sustainable development.
			CO3	Ability to demonstrate ethical and professional sustainability while working in a team and communicate effectively for the benefit of the society.
			CO4	Ability to understand the engineering, finance and management principles.

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4TH SEM 18-SCHEME

Sl. No	SUBJECT NAME	Subject Code		Course Outcomes(CO)
1	COMPLEX ANALYSIS, PROBALITY AND STATISTICAL METHODS	18MAT41	CO1	Use the concepts of analytic functions and complex potentials to solve the problems arising in electromagnetic field theory,communication, planning, analysis, design, construction, and deployment
			CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing
			CO3	Apply discrete and continuous probability distributions in analysing the probability models arising in engineering field
			CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data
			CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis
2	ANALOG CIRCUITS	18EC42	CO1	Understand the characteristics of BJTs and FETs
			CO2	Design and analyze BJT and FET amplifier circuits
			CO3	Design sinusoidal and non-sinusoidal oscillators
			CO4	Understand the functioning of linear ICs
			CO5	Design of Linear IC based circuits
3	CONTROL SYSTEMS	18EC43	CO1	Develop the mathematical model of mechanical and electrical systems
			CO2	Develop transfer function for a given control system using block diagram reduction techniques and signal flow graph method
			CO3	Determine the time domain specifications for first and second order systems
			CO4	Determine the stability of a system in the time domain using Routh-Hurwitz criterion and Root-locus technique
			CO5	Determine the stability of a system in the frequency domain using Nyquist and bode plots
4	ENGINEERING STATISTICS AND LINEAR ALGEBRA	18EC44	CO1	Identify and associate Random Variables and Random Processes in Communication events
			CO2	Analyze and model the Random events in typical communication events to extract quantitative statistical parameters
			CO3	Analyze and model typical signal sets in terms of a basis function set of Amplitude, phase and frequency
			CO4	Demonstrate by way of simulation or emulation the ease of analysis employing basis functions, statistical representation and Eigen values
5	SIGNALS AND SYSTEMS	18EC45	CO1	Analyze the different types of signals and systems
			CO2	Determine the linearity, causality, time-invariance and stability properties of continuous and discrete
			CO3	Represent continuous and discrete systems in time and frequency domain using different transforms

6	MICROCONTROLLER	18ECL46	CO1	Explain the difference between Microprocessors & Microcontrollers, Architecture of 8051
				Microcontroller. Interfacing of 8051 to external memory and Instruction set of 8051
			CO2	Write 8051 Assembly level programs using 8051 instruction set
			CO3	Explain the Interrupt system, operation of Timers/Counters and Serial port of 8051
			CO4	Write 8051 Assembly language program to generate tunings and waveforms using 8051 timers, to send & receive serial data using 8051 serial port and to generate an external interrupt using a switch.
			CO5	Write 8051 Assembly language program to generate square wave on 8051 I/O port pin using interrupt and C Programme to send & receive serial data using 8051 serial port
			CO6	Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to 8051 using 8051 I/O ports.
7	MICROPROCESSOR AND MICROCONTROLLER LABORATORY	18ECL47	CO1	Write Assembly language programs in 8051 for solving simple problems that manipulate input data
			CO2	Interface different input and output devices to 8051 and control them using Assembly language programs
			CO3	Interface the serial devices to 8051 and do the serial transfer using C programming
8	ANALAOG CIRCUITS LABORATORY	18ECL48	CO1	Design analog circuits using BJT/FETs and evaluate their performance characteristics
			CO2	Design analog circuits using OPAMPs for different applications
			CO3	Simulate and analyze analog circuits that uses ICs for different electronic applications.

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DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
(NBA Accredited Department)
COURSE OUTCOMES
Academic Year 2021-22

Sl No	SUBJECT NAME	Subject Code		Course Outcomes(CO)
1	DIGITAL COMMUNICATION	18EC61	C101	Associate and apply the concepts of Bandpass sampling to null specified signals and channels
			C102	Analyze and compute performance parameters and transfer rates for low gain multicarriers coded under ideal and corrupted non band limited channels
			C103	Test and validate symbol processing and performance parameters at the receiver on ideal and corrupted bandlimited channels.
			C104	Demonstrate that bandpass signals subjected to corruption and distortion in a bandlimited channel can be processed at the receiver to meet specified performance criteria
2	EMBEDDED SYSTEMS	18EC62	C201	Describe the architectural features and instructions of 32 bit microcontroller ARM Cortex M3
			C202	Apply the knowledge gained for Programming ARM Cortex M3 for different applications
			C203	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system
			C204	Develop the hardware software co-design and firmware design approaches
			C205	Explain the need of real time operating system for embedded system applications
3	MICROWAVE and ANTENNAS	18EC63	C301	Describe the use and advantages of microwave transmission
			C302	Analyze various parameters related to microwave transmission lines and waveguides
			C303	Identify microwave devices for several applications
			C304	Analyze various antenna parameters necessary for building a RF system
			C305	Recommend various antenna configurations according to the applications
4	DIGITAL SYSTEM DESIGN USING VERILOG	18EC641	C401	Construct the combinational circuits, using discrete gates and programmable logic devices
			C402	Describe how arithmetic operations can be performed for each kind of code, and also combinational circuits that implement arithmetic operations
			C403	Design a semiconductor memory for specific chip design
			C404	Design embedded systems using small microcontrollers, larger CPUs/DSPs, or hard or soft processor cores
			C405	Synthesize different types of I/O controllers that are used in embedded system
5	MOBILE APPLICATION DEVELOPMENT	18CS651	C501	Create, test and debug Android application by setting up Android development environment
			C502	Implement adaptive, responsive user interfaces that work across a wide range of devices
			C503	Infer long running tasks and background work in Android applications
			C504	Demonstrate methods in storing, sharing and retrieving data in Android applications
			C505	Analyze performance of android applications and understand the role of permissions and security

6	PROGRAMMING IN JAVA	18CS653	CO1	Explain the object-oriented concepts and JAVA
			CO2	Develop computer programs to solve real world problems in Java
			CO3	Develop simple GUI interfaces for a computer program to interact with users
7	WORLD CLASS MANUFACTURING	18ME852	CO1	Understand recent trends in manufacturing
			CO2	Demonstrate the relevance and basics of World Class Manufacturing
			CO3	Understand customization of product for manufacturing
			CO4	Understand the implementation of new technologies
			CO5	Compare the existing industries with WCM industries
8	EMBEDDED SYSTEMS LAB	18ECL86	CO1	Understand the construction set of 32 bit microcontroller ARM Cortex M3, and the software tool required for programming in Assembly and C language
			CO2	Develop assembly language programs using ARM Cortex M3 for different applications
			CO3	Interface external devices and I/O with ARM Cortex M3
			CO4	Develop C language programs and library functions for embedded system applications.
9	COMMUNICATION LAB	18ECL87	CO1	Determine the characteristics and response of microwave waveguide
			CO2	Determine the characteristics of microstrip antennas and devices and compute the parameters associated with it
			CO3	Design and test the digital and analog modulation circuits and display the waveforms
			CO4	Simulate the digital modulation systems and compare the error performance of basic digital modulation schemes
10	MINI PROJECT	18ECMP88	CO1	Ability to practice acquired knowledge within the chosen area of technology for project development
			CO2	Ability to: Explore and strengthen the understanding of fundamentals through practical application of theoretical concepts
			CO3	Ability to: provide students hands on experience on, troubleshooting, maintenance, fabrication, innovation, record keeping, documentation etc thereby enhancing the skill and competency gain of technical education
			CO4	Ability to: Identify, improve, develop and justify the technical aspects of the chosen project for societal and environmental benefits.

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DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

(NBA Accredited Department)

COURSE OUTCOMES

Academic Year 2021-22

8TH SEM B-SUBNAME

Sl.No	SUBJECT NAME	Subject Code		Course Outcomes(CO)
1	WIRELESS AND CELLULAR COMMUNICATION	18EC81	CO1	Ability to explain the concepts of propagation mechanisms like reflection, diffraction, scattering in wireless channels
			CO2	Ability to develop a scheme for idle mode, call setup, call progress handling, call teardown in GSM network
			CO3	Ability to develop a scheme for idle mode, call setup, call progress handling, call teardown in CDMA network
			CO4	Ability to understand the basic operations of Air interface in LTE 4G system
2	NETWORK SECURITY	18EC821	CO1	Ability to explain Network Security protocols
			CO2	Ability to explain Enterprise Security Framework
			CO3	Ability to apply concept of cybersecurity framework in computer system administration
3	OPTICAL COMMUNICATION NETWORKS	18EC822	CO1	Classification and working of optical fiber with different modes of signal propagation
			CO2	Describe the transmission characteristics and losses in optical fiber communication
			CO3	Describe the construction and working principle of optical connectors, multiplexers and amplifiers.
			CO4	Describe the constructional features and the characteristics of optical Sources and detectors
			CO5	Illustrate the networking aspects of optical fiber and describe various standards associated with it
4	PROJECT WORK PHASE-II	18ECP83	CO1	Analyze the problem, formulation and solution of the selected project
			CO2	Develop solutions for contemporary problems using modern tools for sustainable development.
			CO3	Demonstrate ethical and professional sustainability while working in a team and communicate effectively for the benefit of the society
			CO4	Understand the engineering, finance and management principles.
5	TECHNICAL SEMINAR	18ECS84	CO1	Ability to identify state-of-the-art and futuristic technologies through self-motivation and through collaboration with others.
			CO2	Ability to conduct a detailed literature survey and self-study in order to completely understand the intricacies of the chosen topic.
			CO3	Ability to conceptualize solutions built using state-of-the-art technologies in terms of their architecture, design and deployment.
			CO4	Ability to identify the scope and limitations of specific technology in terms of their applicability along with a visualization of the means to grow specific technology
			CO5	Ability to create comprehensive technical reports using relevant tools and to make oral presentation of technical topics with adherence to timeliness, clarity and such other soft skills alongside a presentable attitude and behaviour
6	INTERNSHIP	18ECI85	CO1	Ability to learn current technologies used in Industry
			CO2	Ability To communicate effectively and write profound technical reports
			CO3	Able to Provides illustrations of the technology learnt
			CO4	Able to Provides additional information beyond the learnings during the internship out of his/her own thoughts

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Don Bosco Institute of Technology, Bangalore

(NAAC Accredited Institution)

Department of Electrical and Electronics Engineering

(Accredited by NBA)

Dt: 08/04/2022

NEW VERSION

VISION OF THE DEPARTMENT

Aspire to be a center of excellence to impart value based education in the field of Electrical and Electronics Engineering to transform the young minds to serve the societal needs.

MISSION OF THE DEPARTMENT

1.To provide theoretical and practical knowledge in the field of Electrical and Electronics Engineering.

2.To enhance the computational skills by usage of software tools.

3.To provide the learning environment to gain knowledge of Inter-disciplinary domains.

4.To collaborate with industry to facilitate learning beyond the curriculum.

PROGRAM SPECIFIC OUTCOMES

PSO1: Apply the fundamentals of mathematics, electrical and electronics engineering knowledge to formulate and solve the problems.

PSO2: Use the tools and techniques to implement the solutions in the area of electrical and electronic systems.

PSO3: Develop the ability of interpersonal skills for successful adaptation in multi disciplinary platform.

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: To contribute in implementation of products and services through technology development in the area of electrical engineering and allied fields.

PEO 2: To develop professionally through training and lifelong learning keeping abreast of the technology developments.

PEO 3: To develop leadership qualities and entrepreneurship skills.

8/4/2022

HOD – EEE

Head of the Department
Dept. of Electrical & Electronics Engg.
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8/4/22

IQAC – Director

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8-04-2022

Principal

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PROGRAM OUTCOMES (PO)

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and engineering specialization to the solution of complex engineering problems.

2. **Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems.

5. **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6. **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

1/4/2022

HOD - EEE

Head of the Department
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DON BOSCO INSTITUTE OFTECHNOLOGY
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Outcome Definition

Semester: 3rd **AY 2021-22**

Course: ENGINEERING MATHEMATICS –III **Course Code: 18MAT31**

C201.1	Use Laplace Transform and Inverse Laplace Transform in solving Differential Equation in Network Analysis, Control System and other fields of engineering.
C201.2	Demonstrate Fourier Series to study the behaviour of Periodic function and their applications in system communications and digital signal processing and Field theory.
C201.3	Make use of Fourier Transform and Z- Transform to illustrate the function arising in wave and heat propagation, signals and systems.
C201.4	Solve the first and second order ordinary differential equation arising in Engineering problems using single step and multistep numerical methods.
C201.5	Determine external of a functional using calculus of variation and solve problem arising in dynamics of rigid bodies and vibrational analysis.

Course: Electric Circuit Analysis **Course Code: 18EE32**

C202.1	Understand concept of basic laws and method of analysis of dc and ac
C202.2	Solve complex electric circuit using theorems
C202.3	Discuss resonance and importance of initial conditions, synthesis waveform using Laplace transform

Course: Transformers and Generators **Course Code: 18EE33**

C203.1	To understand the constructions, operation and performance of 1-Φ and 3-Φ transformers and their analysis.
C203.2	To understand the construction, operations and performance analysis of synchronous generator

Course: Analog Electronics Circuits **Course Code: 18EE34**

C204.1	Able to predict the output response of clipper clamper circuits
C204.2	able to understand different bias ckt design for transistor amplifier
C204.3	able to understand the concept of feedback circuit it's type and design
C204.4	able to understand different power amplifier KY and design
C204.5	able to understand FET and MOSFET amplifier and design for common source and fixed bias ckt

Course: Digital System Design **Course Code: 18EE35**

C205.1	Develop simplified switvhing equations using k-map & Q-M techniques, explain the operation of decoders, encoders, multiplexers, adders& subtractors,binary comparators
C205.2	Able to explain working of latches, flip flops and to design sync. And Async. Counters, shift register using flip flop
C205.3	Able to develop mealy and moore model and state diagram, able to apply knowledge to design counters & registers and also able to understand types of RAM,ROM

Course: Electrical and Electronics Measurement **Course Code: 18EE36**

C206.1	Measure resistance inductance and capacitance using bridges and determine earth resistance
C206.2	Explain the working of various meters used for measurement of power Energy and understand the adjustments, calibration and errors.
C206.3	Explain the working of different electronic instruments
C206.4	Explain the working of different display and recording devices.

Course: Electrical Machines Lab 1 **Course Code: 18EEL37**

C207.1	Evaluate the performance (equivalent parameters, efficiency, regulation and losses) of transformers from the test data obtained.
C207.2	Connect and operate two single phase transformers of different KVA rating in parallel.
C207.3	Connect single phase transformers for three phase operation and phase conversion.
C207.4	Compute the voltage regulation of synchronous generator using the test data obtained by various methods.
C207.5	Evaluate the performance & Power angle curve of synchronous generators from the test data.

Course: Electronics Lab **Course Code: 18EEL38**

208.1	Design & test rectifier circuits with & without capacitor filters
208.2	Determine h - parameter models of transistor for all modes
208.3	Design & test BJT & FET amplifier and Oscillator Circuits
208.4	Realise Boolean expressions, adders, subtractos using gates.
208.5	Realise different types of counters & code converters

Course: Constitution of India, Professional Ethics and Human Rights Course Code:18CPH39

C209.1	Have constitutional knowledge and legal literacy.
C209.2	Understand Engineering and Professional ethics and responsibilities of Engineers.
C209.3	Understand the cybercrimes and cyber laws for cyber safety measures.

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DON BOSCO INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Outcome Definition

Semester: 4th **AY 2021-22**

Course: Engineering Mathematics IV **Course Code: 18MAT41**

C210.1	Use the concept of analytic function and complex potential to solve the problem arising in Electromagnetic Theory
C210.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing
C210.3	Apply discrete and continous probability distribution in analysing the probability model arising in engineering field
C210.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data
C210.5	Construct joint probability distribution and demonstrate the validity of testing of Hypothesis

Course: Power Generation and Economics **Course Code: 18EE42**

C211.1	Explain the arrangement and working of hydroelectric power plants.
C211.2	Explain the arrangement and working of steam, diesel and gas turbine power plants.
C211.3	Explain the arrangement and operation of nuclear power plants.
C211.4	Explain the operation of different substation equipments, importance of neutral grounding and is types.
C211.5	Explain the economics of power generation and determine the cost of electricity.

Course: Transmission and Distribution **Course Code: 18EE43**

C212.1	To understand the importance of HVAC, EHVAC, UHVAC and HVDC transmission and the importance of HVAC, EHVAC, UHVAC and HVDC transmission.
C212.2	To design insulators for a given voltage level and to understand the concept of reliability
C212.3	To calculate the parameters of the transmission line for different configurations and assess the performance of the line and Able to study underground cables for power transmission and evaluate different types of distribution systems

Course: Electric Motors **Course Code: 18EE44**

C213.1	Explain the construction & operation, classification, and performance analysis of DC Motors.
C213.2	Demonstrate and explain the methods of testing of DC machines and determine losses and efficiency.
C213.3	Explain the construction & operation, and performance analysis of single phase and three phase Induction motors
C213.4	Explain the principal of operation and performance analysis of synchronous motors and principal of operation of special purpose motors

Course: Electromagnetic Field Theory **Course Code: 18EE45**

C214.1	Evaluate Problem on E due to Point, Linear volume charge & Apply gauss law to evaluate E and use divergence theorem to evaluate volume charge density
C214.2	Determine potential due to point charge, calculate gradient & Explain behaviour of electric field across different boundaries
C214.3	Apply Laplace equation to determine voltage function, capacitance & apply biot savart law and ampere law evaluate magnetic field
C214.4	Calculate magnetic force, potential energy and magnetization with response to magnetic material and force
C214.5	apply maxwell equations for time varying fields, Electromagnetic waves and evaluate power associated with Electromagnetic wave using poynting theorem

Course: LIC & op-amp **Course Code: 18EE46**

C215.1	Describe the characteristics of ideal and practical operational amplifier
C215.2	Design filters and signal generators using linear ICs.
C215.3	Demonstrate the application of Linear ICs as comparators and rectifiers.
C215.4	Use ICs in the electronic projects

Course: Electrical Machines Laboratory 2 **Course Code: 18EEL47**

C216.1	Conducting suitable test on DC machines to pre-determine the performance characteristics and also to control the speed of DC motor.
C216.2	Perform load test on single phase and three phase induction motor to analyze its performance.
C216.3	Conduct no-load and blocked rotor test on induction motor to pre-determine the performance characteristics and equivalent circuit parameters.
C216.4	Conduct test on synchronous motor to draw the performance curves

Course: OP-AMP and LIC LAB **Code: 18EEL48**

C217.1	To conduct experiment to determine the characteristic parameters of OP-Amp
C217.2	To design test the OP-Amp as Amplifier, adder, subtractor, differentiator and integrator
C217.3	To design test the OP-Amp as oscillators and filters
C217.4	Design and study of Linear IC's as multivibrator power supplies.

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DON BOSCO INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Outcome Definition

Semester: 5th **AY 2021-22**

Course: Management and entrepreneurship **Course Code: 18EE51**

C301.1	Explain the field of management, task of the manager, planning and steps in decision making
C301.2	Discuss the structure of organization, importance of staffing, leadership styles, modes of communication, techniques of coordination and importance of managerial control in business
C301.3	Explain the concepts of entrepreneurship and a businessman's social responsibilities towards different groups.
C301.4	Show an understanding of role of SSI's in the development of country and state/central level institutions/agencies supporting business enterprises.
C301.5	Discuss the concepts of project management, capital budgeting, project feasibility studies, need for project report and new control techniques

Course: Microcontroller **Course Code: 18EE52**

C302.1	explain the architecture of 8051, Insturction Set, Registers, Memory organisation and addressing modes
C302.2	write 8051 assembly level and C Programs for ALU operations, data conversion, data serialisation, I/O operations
C302.3	Interface 8051 with real world devices such as LCDs, Keyboards, ADC, DAC and sensors.

Course: Power Electronics **Course Code: 18EE53**

C303.1	explain application of power electronics types power diode it's characteristics free wheeling diode and diode rectifier
C303.2	explain power transistor mosfet but igbt pulse transformer and opto coupler
C303.3	able to explain thyristor characterics two transistor amplify turn on and off series and parallel protection ckts
C303.4	able to explain controlled rectifier RL load with free wheeling diode 1-dual converter different types of AC voltage controller and DC to AC converters free

Course: Signals and Systems **Course Code:18EE54**

C304.1	Classify the signals and systems and explain basic operations on signals and properties of systems
C304.2	Apply convolution in both continuous and discrete domain for the analysis of systems given impulse response of a system.
C304.3	Solve the continuous time and discrete time systems by various methods and their representation by block diagram.
C304.4	Perform Fourier analysis for continuous and discrete time, linear time invariant systems.

C304.5	Apply Z-transform and properties of Z transform for the analysis of discrete time systems.

Course: Electrical Machine Design **Course Code: 18EE55**

C305.1	Able to discuss design factors, limitations, modern trends in design, manufacturing techniques and properties of different materials
C305.2	Derive the output equation for various electrical Machines
C305.3	Estimate the number of cooling tubes, no-load current and leakage reactance of transformer , stator & Rotor design of A.C & D.C Machines

Course: High Voltage Engineering **Course Code: 18EE56**

C306.1	Explain conduction and breakdown phenomenon in gases, liquid dielectrics, and solid dielectrics.
C306.2	Explain generation of high voltages and currents
C306.3	Discuss measurement techniques for high voltages and currents
C306.4	Discuss overvoltage phenomenon and insulation coordination in electric power systems and testing of Electrical apparatus

Course: Microcontroller Lab **Course Code: 18EEL57**

C307.1	Write 8051 assembly level language programs for ALU operations, data transfer, arithmetic , Boolean and logical instructions & for code conversions.
C307.2	Write 8051 assembly level language programs for various operations using subroutine for generation of delays, counters, configuration of SFRs for serial communication & Timers.
C307.3	Interface 8051 to work with external devices for Stepper motor control, DC motor control for controlling the speed.
C307.4	generate different waveforms using DAC Interface
C307.5	work with a small team to carryout experiments using microcontroller concepts and prepare reports.

Course: Power Electronics Lab **Course Code: 18EEL58**

C308.1	static characteristics of semiconductor devices to discuss their performance
C308.2	Trigger the SCR by differentmethods
C308.3	Verify the performance of single phase controlled full wave rectifier ,inverterand AC voltage controller with R and RL loads
C308.4	Control the speed of a dc motor, universal motor and stepper motors
C308.5	Perform Commutation of SCR by different methods

Environmental Studies **18CIV59**

C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
C309.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or questions related to the environment.
C309.3	Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.

C309.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

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Department of Electrical & Electronics Engineering

Course Outcome Definition

Semester: 6th **AY 2021-22**

Course: CONTROL SYSTEMS **Course Code: 18EE61**

C309.1	Develop the mathematical model of mechanical and electrical system
C309.2	Develop transfer function for a given control system using block diagram reduction technique and signal flow graph method
C309.3	Determine transient and steady state time response of a simple control system
C309.4	Investigate the performance of a given system in time and frequency domain
C309.5	Determine the controller or compensator configuration and parameter values for the given design specification

Course: Power System Analysis 1 **Course Code: 18EE62**

C310.1	Able to model the power system components and construct PU impedance diagram of power system
C310.2	Able to analyse three phase symmetrical faults on Power system
C310.3	Able to Compute unbalanced phasor in terms of sequence components and vice versa and also develop sequence networks
C310.4	Able to analyse various unsymmetrical faults in power system

Course: Digital Signal Processing **Course Code: 18EE63**

C311.1	Apply DFT and IDFT to perform linear filtering techniques on given sequences to determine the output.
C311.2	Design and realise variouos IIR Filter using different techniques
C311.3	Design and realise various FIR Filter using different techniques

Electrical Vehicle Technology **18EE646**

C312.1	Able to explain the working of EV ,Hybrid EV and the energy storage requirements for EV and HEV
C312.2	Able to arrange the different power converter topology used for electric vehicle propulsion
C312.3	Develop and design the converter topology for EV application and transformer less topology for battery charging

CAED **18EE641**

C312.1	Develop armature windings diagram for DC and AC machines
C312.2	Develop Single line diagram of generating station and substation using standarad symbols
C312.3	Construct sectional view of core and shell type transformers using design data
C312.4	Construct sectional view of assembled DC and AC machine and their parts using design data and Sketches

Course: World Class Manufacturing **Course Code: 18ME652**

C313.1	Understand the basics of world class manufacturing & recent trends in manufacturing.
C313.2	Understand Customization of product for manufacturing
C313.3	Understand the implementation of new technologies & compare the existing industries with WCM industries.

Course: Programming in JAVA **Course Code: 18CS653**

C313.1	Learn fundamental features of object oriented language like inheritance, polymorphism and Java JDK environment to create, debug and run simple Java programs
C313.2	learn operators and control statements using programming examples
C313.3	Learn object oriented concepts using programming examples
C313.4	Study the concepts of importing of packages and exception handling mechanism
C313.5	Discuss the String Handling examples with Object Oriented concepts

Course: Control System Lab **Course Code: 18EE66**

C314.1	Utilize software package and discrete components in assessing the time and frequency domain response of a given second order system.
C314.2	Design, analyze and simulate Lead, Lag and Lag – Lead compensators for given specifications.
C314.3	Determine the performance characteristics of ac and DC servomotors and synchro-transmitter receiver pair used in control systems.
C314.4	Simulate the DC position and feedback control system to study the effect of P, PI, PD and PID controller and Lead compensator on the step response of the system.
C314.5	Develop a script files to plot Root locus, Bode plot and Nyquist plot to study the stability of the system

Course: Digital Signal Processing Lab **Course Code: 18EEMP68**

C315.1	Physical interpretation of sampling theorem in time & frequency domain
C315.2	Evaluate impulse response of a system
C315.3	Perform convolution & provide solution for given difference equation
C315.4	Compute DFT & IDFT of a given sequence using basic definition & fact methods
C315.5	Design & implement IIR & FIR filters

Course: Mini Project **Course Code: 18EEP68**

C316.1	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
C316.2	Habituated to critical thinking and use problem solving skills
C316.3	Work in a team to achieve common goal
C316.4	Able to Manage the project by properly managing the finance.
C316.5	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms
C316.6	Present the mini-project and be able to defend it

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Department of Electrical & Electronics Engineering

Course Outcome Definition

Semester: 7th **AY 2021-22**

Course: Power System Analysis 2 **Course Code: 18EE71**

C401.1	Formulate Network Matrices and model for solving Load flow problems
C401.2	Perform steady state power flow analysis using numerical iterative techniques
C401.3	Analyse issues of economic load dispatch and Unit commitment Problems
C401.4	Analyse Sc faults in power system Networks using Bus impedance matrix and apply point by point method to solve swing equation

Course: POWER SYSTEM PROTECTION **Course Code: 18EE72**

C402.1	Able to analyse significance of power system protection, relay construction and principle of over-current protection
C402.2	Able to relate protection in terms of distance, pilot & differential schemes in rotating machines, transformer and bus zone protection
C402.3	Able to interpret circuit breakers, Fuses and protection against over-voltages

Course: Solar and Wind Energy **Course Code: 18EE731**

C403.1	Discuss the importance of the role of renewable energy, the concept of energy storage devices and solar energy basic concepts
C403.2	Discuss the concept of solar radiation data and application of solar thermal system
C403.3	Discuss the concept of solar PV system fabrication, operation of solar cell, sizing and design of PV system and application of solar PV system
C403.4	Explain basic Principles of Wind Energy Conversion, collection of wind data, energy estimation and site selection and economics of wind energy
C403.5	Discuss the performance of different wind-machines, energy storage, applications of wind energy and environmental aspects

Course: Utilization of Electrical Power **Course Code: 18EE742**

C404.1	Discuss different methods of electric heating & welding.
C404.2	Discuss the laws of electrolysis, extraction, refining of metals and electro deposition process.
C404.3	Discuss the laws of illumination, different types of lamps, lighting schemes and design of lighting systems.
C404.4	Analyze systems of electric traction, speed time curves and mechanics of train movement.
C404.5	Explain the motors used for electric traction, their control & braking and power supply system used for electric traction also Explain the working of electric and hybrid electric vehicles.

Course: Python Application Programming **Course Code: 18CS752**

C405.1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
C405.2	Demonstrate proficiency in handling Strings and File Systems.
C405.3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
C405.4	Interpret the concepts of Object-Oriented Programming as used in Python.
C405.5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

Course: Environmental Protection and Management **Course Code: 18CV753**

C405.1	To apply the corporate EMS compling to international environmental management sysytem standards.
C405.2	To apply standards of various quality parameters with new technologies.
C405.3	To develop pollution prevention assessment team and implement waste minimization options.
C405.4	To prepare environmental audit systems for organizations.
C405.5	To apply EMS,waste audit and pollution prevention at various industries.

Course: POWER SYSTEM SIMULATION LAB **Course Code: 18EEL76**

C406.1	Develop a program in MATLAB to assess the performance of medium and long transmission lines & to obtain the power angle characteristics of salient and non-salient pole alternator.
C406.2	To assess the transient stability under three phase fault at different locations in a of radial power systems.
C406.3	To formulate bus admittance and bus impedance matrices of interconnected power systems.
C406.4	To solve power flow problem for simple power systems to study unsymmetrical faults at different locations in radial power systems.
C406.5	To study optimal generation scheduling problems for thermal power plants

Course: Relay and High Voltage Lab **Course Code: 18EEL77**

C407.1	Verify the characteristics of Various Relays.
C407.2	Analyze the spark over characteristics for both uniform and non-uniform configurations using High AC and DC voltages and Show knowledge of protecting generator, motor and feeders.
C407.3	Measure high AC and DC voltages and breakdown strength of transformer oil and Show knowledge of generating standard lightning impulse voltage.
C407.4	Draw electric field and measure the capacitance of different electrode configuration models

Course: PROJECT PHASE – I AND SEMINAR **Course Code: 18EEP78**

C408.1	Undertake problem identification, formulation and solution
C408.2	Design engineering solutions to complex problems utilizing a systems approach.
C408.3	Communicate with engineers and the community at large in written an oral forms.
C408.4	Demonstrate a sound technical knowledge of their selected project topic.

29/9/2021

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Department of Electrical & Electronics Engineering

Course Outcome Definition

Semester: 8th **AY 2021-22**

Course: Power system Operation and control **Course Code: 18EE81**

C409.1	Describe various levels of controls in power systems, the vulnerability of the system, components, architecture and configuration of SCADA.
C409.2	Analyse Automatic Generation Control (AGC) and AGC in interconnected power systems
C409.3	Explain voltage, Reactive Power control, Reliability, Security and state estimation

Course: Power system Planning **Course Code: 18EE824**

C410.1	Understand planning methodology for optimum power system expansion with load forcasting & economic appraisal to mobilize resources to meet the investment
C410.2	Understand transmission, distribution and Planning requirement
C410.3	To analyse Reliability, Quality, Demand side planning and electrical market

Course: PROJECT WORK PHASE –II **Course Code: 18EEP83**

C411.1	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
C411.2	Habituated to critical thinking and use problem solving skills
C411.3	Learn on their own, reflect on their learning and take appropriate actions to improve it.
C411.4	Work in a team to achieve common goal.
C411.5	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
C411.6	Present the project and be able to defend it.

Course: Technical Seminar **Course Code: 18EES84**

C412.1	ability to identify state of art and futuristic technologies through self learning through others
C412.2	Ability to conduct detailed literature survey and self-study in order to completely understand the intricies of chosen topic.
C412.3	ability to conceptualize solutions built using in terms of architecture and technology design development
C412.4	ability to identify the scope and limitations of specific technology and create comprehensive technical reports using tools to make oral presentation

Course: Internship **Course Code: 18EEI85**

C413.1	Student is able to construct the company profiles by compiling the brief history management structure, achievement.
C413.2	Able to learn asses it's strength threat opportunities.
C413.3	Able to determine the challenges and future potential for organisation in particular and in general
C413.4	Able to learn theory and practical situations by accompanying task during the period

29/3/2022

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DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74
Department of Management Studies and Research
COURSE OUTCOMES (2021-22)
1st SEM 2020 SCHEME

		Subject Code		Course Outcomes(CO)
1	Management and Organisational Behaviour	20MBA11	CO1	Gain practical experience in the field of Management and Organization Behaviour
			CO2	Organizational Behaviour
			CO3	Apply managerial and behavioral knowledge in real world situations.
			CO4	Develop a greater understanding about Management and Behavioural aspects to analyse the concepts related to individual behavior, attitude, perception and personality
			CO5	Understand and demonstrate their exposure on recent trends in management
2	Managerial Economics	20MBA12	CO1	The student will understand the application of Economic Principles in Management decision making
			CO2	Industry.
			CO3	The Student will be able to understand, assess and forecast Demand
			CO4	The student will apply the concepts of production and cost for optimization of production
			CO5	The student will design Competitive strategies like pricing, product differentiation etc. and marketing according to the market
3	Accounting for Managers	20MBA13	CO1	Demonstrate theoretical knowledge and its application in real time accounting.
			CO2	Capable of preparing financial statement of companies.
			CO3	Independently undertake financial statement analysis and take decisions
			CO4	Comprehend emerging trends in accounting and computerization of Accounting systems
4	Business Statistics	20MBA14	CO1	Facilitate objective solutions to business decision making under subjective conditions.
			CO2	Demonstrate different statistical techniques in business/real-life situations.
			CO3	Understand the importance of probability in decision making.
			CO4	Understand the need and application of analytics.
			CO5	Understand and apply various data analysis functions for business problems.
5	Marketing Management	20MBA15	CO1	Develop an ability to assess the impact of the environment on marketing function
			CO2	To formulate marketing strategies that incorporate psychological and sociological factors which influence buying
			CO4	Identifying marketing channels and the concept of product distribution
			CO5	Identifying techniques of sales promotion , significance of marketing research
			CO6	Synthesize ideas into a viable marketing plan for various modes of marketing
6	Managerial Communication	20MBA16	CO1	The students will be aware of their communication skills and know their potential to become successful managers
			CO2	The students will get credited with the mechanics of writing and can compose the business letters in English precisely and effec
			CO3	Students will get exposure in drafting business proposals to meet the challenges of competitive environment
			CO4	The students will be introduced to the managerial communication practices in business these are in vogue
			CO5	Media usage in communications with emphasis on analyzing business situations

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Department of Management Studies and Research

COURSE OUTCOMES (2021-22)

III Sem 2020 Scheme

Sl. No	Subject Name	Subject Code	Course Outcomes(CO)	
1	Emerging Exponential Technologies	20MBA301	CO1	Identify different emerging technologies
			CO2	Select appropriate technology and tools for a given task
			CO3	Identify necessary inputs for application of emerging technologies
			CO4	Understand the latest developments in the area of technology to support business
2	Technology and Operational Strategy	20MBA302	CO1	Acquire the knowledge about the concepts of production and operation management
			CO2	Demonstrate the basic concepts of process mapping
			CO3	Evaluate the importance of Lean Manufacturing
			CO4	Develop strategies of Total quality management
			CO5	Understand the roles of ISO standards and production system
3	Services Marketing	20MBAMM303	CO1	Develop an understanding about the various concepts and importance of Services Marketing.
			CO2	Enhance knowledge about emerging issues and trends in the service sector.
			CO3	Learn to implement service strategies to meet new challenges.
4	Marketing Research &Analytics	20MBAMM304	CO1	Comprehend the objectives of Market research & its application in solving marketing problems.
			CO2	Appreciate the use of different data collection methods, sampling design techniques, measurement methods to analyze the data
			CO3	Generalize and interpret the data with the help of various measurement techniques.
			CO4	To understand the emergence of new trends in research.
5	Consumer Behaviour	20MBAMM305	CO1	Explain the background and concepts vital for understanding Consumer Behaviour
			CO2	Identify the role of Variables that determines Consumer Behaviour in Social & cultural domain
			CO3	Identifying the psychological and behavioural practices adopted by organizations to enhance the Consumer Behaviour
6	Retail Management	20MBAMM306	CO1	Career development in the field of sales
			CO2	Management of sales
			CO3	Find out the contemporary retail management, Issues, and Strategies.
			CO4	Evaluate the recent trends in retailing and its impact in the success of modern business
			CO5	Relate store management and visual merchandising practices for effective retailing
7	Investment Management	20MBAFM303	CO1	The student will understand the capital market and various instruments for Investment.
			CO2	The learner will be able to assess the risk and return associated with its concepts and methods to value securities.
			CO3	The student will be able to analyse the Economy, Industry and Company framework for Investment Management
			CO4	The student will learn the theories of Portfolio management and also the tools and techniques for efficient portfolio management
8	Direct Taxation	20MBAFM304	CO1	Understand the basics of taxation and process of computing residential status
			CO2	Calculate taxable income under different heads
			CO3	Understand deductions and calculation of tax liability of individuals

			CO4	Know the corporate tax system.
9	Banking and Financial Services	20MBAFM305	CO1	The Student will be acquainted to various Banking and Non-Banking financial services in India
			CO2	The Student will understand the activities of Merchant Banking and credit rating
			CO3	The Student will be equipped to understand micro financing and other financial services in India
			CO4	The Student will understand how to evaluate and compare leasing & hire purchase
10	Advanced Financial Management	20MBAFM306	CO1	Get an overview of capital structure theories.
			CO2	Understand and assess the dividend policy of the firm.
			CO3	Realize the importance of management of working capital in an organization
			CO4	Be aware of the techniques of cash, inventory and receivables management
11	Recruitment and Selection	20MBAHR303	CO1	Gain the practical insight of various principles and practices of recruitment and selection
			CO2	Acquire knowledge of latest conceptual framework used in recruitment and selection process and procedure applied in various
			CO3	Illustrate the application of recruitment and selection tools and techniques in various sectors
			CO4	hiring management system followed in various industries.
12	HR Analytics	20MBAHR304	CO1	Gain practical insight of HR Processes, HR analytics and predictive modelling used in HR functions
			CO2	Acquire conceptual knowledge of HRA frameworks, models and approaches.
			CO3	Illustrate the application of dataflication of HR, predictive analytics tools and techniques
			CO4	decision making in business context
13	Industrial Relations and Labour laws	20MBAHR305	CO1	Gain practical experience related to labour legislations in India across various sectors
			CO2	Acquire conceptual knowledge of Industrial relations and labour laws followed within Industries
			CO3	Develop the greater understanding of IR concepts and its application in solving various issues in IR.
			CO4	Apply the IR and labour laws concepts in various industries in India.
14	Compensation and Reward Management	20MBAHR306	CO1	Gain insights of various conceptual aspects of Compensation and Benefits to achieve organizational goals.
			CO2	Determine the performance based compensation system for business excellence and solve various cases.
			CO3	Designing the compensation strategies for attraction, motivation and retaining high quality workforce
			CO4	wage survey and calculate various bonus.
15	Compensation and Reward Management	18MBAHR306	CO1	Gain insights of various conceptual aspects of Compensation and Benefits to achieve organizational goals.
			CO2	Determine the performance based compensation system for business excellence and solve various cases.
			CO3	Designing the compensation strategies for attraction, motivation and retaining high quality workforce.
			CO4	Understand the Legal & Administrative frames in global compensation to prepare compensation plan, CTC, wage survey and ca

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DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74

Department of Management Studies and Research

COURSE OUTCOMES (2021-22)

II SEM 2020 SCHEME

1	Human Resource Management	20MBA22	CO1	Gain practical experience in the form of Human Resource Concepts, Functions and Process
			CO2	Acquire the conceptual insight of Human Resource and various functions of HR
			CO3	Apply personnel, management and welfare aspects of HR
			CO4	Develop a greater understanding about HR practices, analyze the issues in the field of HR
2	Financial Management	20MBA23	CO1	Understand the basic financial concepts
			CO2	Apply time value of money
			CO3	Evaluate the investment decisions
			CO4	Estimate working capital requirements
			CO5	Analyze the capital structure and dividend decisions
3	Research Methodology	20MBA33	CO1	Understand various research approaches, techniques and strategies in the appropriate to business
			CO2	Apply a range of quantitative / qualitative research techniques to business and day to day management problems
			CO3	Demonstrate knowledge and understanding of data analysis, interpretation and report writing
			CO4	Develop necessary critical thinking skills in order to evaluate different research approaches in business using mind in particular
4	Operations Research	20MBA34	CO1	Get an insight into the fundamentals of Operations Research and its definition, characteristics and phases
			CO2	Use appropriate quantitative techniques to get feasible and optimal solutions
			CO3	Understand the usage of game theory, Queuing Theory and Simulation for Solving Business Problems
			CO4	Understand and apply the network diagram for project management
5	Strategic Management	20MBA35	CO1	Students should get clear idea about the concept of Strategic Management, its importance, Characteristics, process, nature and purpose
			CO2	Student to acquire an understanding of how firms successfully, environment as a strategy and create an organizational structure for business and corporate operations
			CO3	To give the students an insight on strategy at different levels of an organization to gain competitive advantage
			CO4	To help students professional for strategic issues to understand firms and their environment in different markets
			CO5	To enable the students to gain knowledge of strategic implementation and the control measures for effective decision-making
6	Entrepreneurship and Legal Aspects	20MBA36	CO1	analysis
			CO2	To know about the various business models and IL Plans across the various sectors
			CO3	Able to understand the importance of marketing and different forms of businesses
			CO4	Become aware about various sources of funding and institutions supporting entrepreneurs
			CO5	Understand about legal aspects and ways to protect the ideas
			CO6	To understand the laws of starting a company and to know how to protect their ideas

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Department of Management Studies and Research

COURSE OUTCOMES (2021-22)

IV Sem 2020 Scheme

1	B2B Marketing	20MBAMM401	CO1	Understand significance of B2B marketing
			CO2	Apply to create an integrated marketing communication plan which includes promotional strategies
			CO3	Effectively use marketing communications for customer acquisition
			CO4	Create customer strategy and tactics
2	Logistics and Supply chain Management	20MBAMM402	CO1	Demonstrate knowledge of the functions of logistics and supply chain management
			CO2	To relate concepts and activities of the supply chain to actual organizations
			CO3	Highlight the role of technology in logistics and supply chain management
			CO4	Evaluate cases for effective supply chain management and its implementation
3	Digital Marketing Management	20MBAMM403	CO1	Recognize approaches to marketing decisions
			CO2	Appreciate the e-commerce framework and technology
			CO3	Illustrate the use of major internet marketing, online advertising and marketing strategies
			CO4	Develop social media strategy for a given business problem
			CO5	Develop social media strategy for a given business problem
4	Strategic Brand Management	20MBAMM404	CO1	Comprehend knowledge of the management functions which are supporting strand with fundamental concepts and principles of management
			CO2	Understand the core role of management, levels of management and practical applications of the same
			CO3	Effectively use their skills for self-awareness, working in groups and to achieve organizational goals
			CO4	Demonstrate their acumen in applying managerial and behavioral concepts in real world situations
			CO5	Understanding and demonstrate their exposure on recent trends in management
5	Agri Business Marketing	20MBAMM405	CO1	Highlight the characteristics of Indian rural markets and describe the differences between rural and urban consumers
			CO2	Analyze the segments of Indian rural market and appraise strategies for the problems of rural markets
			CO3	Emphasize the different awareness methods, design campaigns for rural markets
			CO4	Apply the strategies to be adopted for influencing the rural consumers
6	International Marketing Management	20MBAMM406	CO1	Understand the differences between domestic marketing and international marketing
			CO2	Understand the concepts of international pricing and the export finance
			CO3	Appraise the knowledge of export import documentation
7	Risk Management and Insurance	20MBAFM407	CO1	Understand various types of risks
			CO2	Assess the process of identifying and managing the risk
			CO3	Acquaint with the functioning of Life insurance in risk management

			CO4	Understand general insurance contract
9	Financial Derivatives	20MBAFM405	CO1	To develop the mechanism of forwards/futures, options, financial swaps, various credit derivatives and VaR with their features, merits and demerits
			CO2	Assess the application of forwards/futures, options, financial swaps, various credit derivatives and VaR using numerical problems
			CO3	Applications of financial derivatives in risk management
			CO4	Critically evaluate various financial derivatives
9	Indirect Taxation	20MBAFM406	CO1	Have clarity about GST issues in India
			CO2	Understanding of key and relevant of GST in India
			CO3	Have an overview of customs duty in India
			CO4	Understanding of valuation for customs duty
10	Mergers, Acquisitions and Corporate Restructuring	20MBAFM404	CO1	Understand M&A with its different classifications, strategies, theories, synergy etc.
			CO2	Conduct financial evaluation of M&A
			CO3	Analyze the results after evaluation
			CO4	Critically evaluate different types of M&A, takeover and anti-takeover strategies
11	Corporate Valuation	20MBAFM405	CO1	Understand corporate valuation and valuation process
			CO2	Familiarize himself with the conceptual techniques of corporate valuation
			CO3	Develop analytical skills relevant for corporate evaluation and value based management
			CO4	Critically evaluate IPOs, M&As, Bankruptcy cases
12	International Financial Management	20MBAFM406	CO1	The student will have an understanding of the International Financial Environment
			CO2	The student will learn about the foreign exchange market, participants and transactions
			CO3	The student will be able to use derivatives in foreign exchange risk management
			CO4	The student will be able to measure the Country Exposure to risk in International environment and various theories associated with it
13	Organizational Leadership	20MBAHR401	CO1	Understand the fundamental concepts and core skills, theories of Organizational Leadership
			CO2	Analyze the organizational leadership style, approaches and traits, its impact on the followers by using leadership theories and instruments
			CO3	Developing better insight in understanding the leadership issues that influence them to work effectively in group
			CO4	Demonstrate their skills in apply of their knowledge in organizational leadership
14	Personal Growth and Interpersonal Effectiveness	20MBAHR402	CO1	How to apply understanding the various personality traits which promotes personal growth.
			CO2	Analyze the concepts of human perception, fallacies and functioning of mind
			CO3	Learn and apply the psychometrics tests in understanding the personality traits
			CO4	Develop the greater insight of self and others through various theories and prepare the development plan for interpersonal effectiveness
15	International HRM	20MBAHR403	CO1	Gain conceptual knowledge and practical experience in understanding the HR issues across globally
			CO2	Comprehend and correlate the strategic approaches to HR issues, analyze PCN's, TCN's and HCN's
			CO3	Develop knowledge and enjoy the concepts of HR in global perspective
			CO4	Have a better insight in HR concepts, policies and practices by critically analyzing the issues in contemporary world globally
16	Organization Change and development	20MBAHR404	CO1	Gain conceptual insight of change management models, OD processes and interventions
			CO2	Develop the understanding of OD to apply OD aspects in private and public sectors in India
			CO3	Acquire the tools and techniques available to implement changes in the organization environment

			CO6	Evaluate the OD interventions by analysing the role of HR consultants
67	Human Resource Audit	[illegible]	CO1	Gain conceptual knowledge and practical experience in understanding the HR Audit
			CO2	Comprehend and correlate the systematic approaches in HR Audit process
			CO3	Develop knowledge and apply the concepts of HR Audit in the organization
			CO4	Have a better insight of HR Audit concepts, policies and practices by critically analysing the reports of contemporary issues in the organization
68	Management Consulting for Business excellence	[illegible]	CO1	Have the practical insight of various principles and practices of Consultant and Consultancy
			CO2	Acquire knowledge of latest conceptual framework used by Consultant and Consultancy process, interventions applied in various sectors
			CO3	Demonstrate the applications of Consultant and Consultancy tools and techniques in various sectors
			CO4	Develop a greater understanding about strategies adopted undertaken by Consultant and Consultancy

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Don Bosco Institute of Technology, Bengaluru
Department of Computer Science & Engineering
Course Details of 2018 - 22 Batch

Sl. No	Course Name/Course Code
C201	18MAT31 - Transform Calculus, Fourier Series And Numerical Techniques ENGINEERING MATHEMATICS - III
C202	18CS32 - DATA STRUCTURES AND APPLICATIONS
C203	18CS33 - Analog and Digital Electronics
C204	18CS34 - COMPUTER ORGANIZATION
C205	18CS35 - Software Engineering
C206	18CS36 - DISCRETE MATHEMATICAL STRUCTURES
C20L7	18CSL37 - Analog and Digital Electronics Laboratory
C20L8	18CSL38 - Data Structures Laboratory
C211	18MAT41 - ENGINEERING MATHEMATICS - IV
C212	18CS42 - Design and Analysis of Algorithms
C213	18CS43 - Operating Systems
C214	18CS44 - Microcontroller and Embedded Systems
C215	18CS45 - Object Oriented Concepts
C216	18CS46 - DATA COMMUNICATION
C21L7	18CSL47 - Design and Analysis of Algorithm Laboratory
C21L8	18CSL48 - Microcontroller and Embedded Systems Laboratory
C301	18CS51 - MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY
C302	18CS52 - Computer Networks and Security
C303	18CS53 - DATABASE MANAGEMENT SYSTEM
C304	18CS54 - Automata theory and Computability
C305	18CS55 - Application Development using Python
C306	18CS56 - Unix Progamming
C30L7	18CSL57 - Computer Network Laboratory
C30L8	18CSL58 - DBMS Laboratory with mini project
C311	18CS61 - System Software and Compilers
C312	18CS62 - Computer Graphics and Visulization
C313	18CS63 - WEB TECHNOLOGY AND ITS APPLICATIONS
C314	18CS643 - Cloud Computing and Its Applications
C315	18EE653 - Renewable Energy Resources
C31L6	18CSL66 - System Software Laboratory
C31L7	18CSL67 - Computer Graphics Lab with Mini Project
C31L8	18CSL68 - Mobile Application Development Laboratory
C401	18CS71 - ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
C402	18CS72 - Big Data Analytics
C403	18CS734 - User interface design
C4044	18CS745 - ROBOTIC PROCESS AUTOMATION
C4051	18EE753 - Electrical Energy Conservation & Auditing
C4052	18ME751 - ENERGY AND ENVIRONMENT
C40L6	18CSL76 - Artificial Intelligence and Machine Learning Lab
C411	18CS81 - INTERNET OF THINGS TECHNOLOGY

C412	18CS822 - Storage Area Network
C413P	18CSP83 - Project phase 2
C414TS	18CSS84 - Technical Seminar
C415I	18CSI85 - Intership

Don Bosco Institute of Technology, Bengaluru
Department of Computer Science & Engineering
CO/PO-PSO Mapping of 2018-22 Batch

3.1.1. Course Outcomes (COs) (SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses and made available as evidence, if asked) (05)

Statements of Course Outcomes	PROGRAMMING IN C AND DATA STRUCTURES	Target(%)	BL
C104.1	Illustrate simple algorithms from different domains such as physics, Mathematics, etc.	70	3
C104.2	Construct a programming solution to a given problem using C	70	3
C104.3	Identify and correct syntax and logical errors in C Programs	70	4
C104.4	Explore user-defined data structures like structures, unions and pointers in implementing solutions	70	4
C104.5	Modularize the given problem using functions and structures	70	4
Statements of Course Outcomes	**18MAT31**	**Target(%)**	**BL**
C201.1	Use Laplace Transform and Inverse Laplace Transform in Solving Differential Equation in Network Analysis, Control System and other fields of Engineering	55	1,2
C201.2	Demonstrate Fourier Series to study the behaviour of periodic function and their Applications in system communications and digital Signal Processingand Field Theory	50	1,2
C201.3	Make use of Fourier Transform and Z Transformsto illustrate the functin arising in wave and heat propagation, signals and systems	50	1,2
C201.4	Solve the first and second order ordinary DE arising in Engineering problems using single step aand multistep numerical Methods	55	1,2,3
C201.5	Determine the external of functional using calculus of variation and solve problems arising in dynamics of rigid bodies and Vibrational Analysis	50	1,2,3
Statements of Course Outcomes	**18CS32**	**Target(%)**	**BL**
C202.1	Use different types of data structures, operations and algorithms	65	2
C202.2	Apply searching and sorting operations on files	60	2
C202.3	Use stack, Queue, Lists, Trees and Graphs in problem solving	65	2
C202.4	Implement all data structures in a high-level language for problem solving	65	2
Statements of Course Outcomes	**18CS33**	**Target(%)**	**BL**
C203.1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp	60	1,2
C203.2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.	65	1,2
C203.3	Simplify digital circuits using Karnaugh Map , and Quine-McClusky Methods	65	1,2
C203.4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types.	60	1,2
C203.5	Develop simple HDL programs	60	1,2
Statements of Course Outcomes	**18CS34**	**Target(%)**	**BL**
C204.1	Explain the basic organization of a computer system	55	2
C204.2	Demonstrate functioning of different sub systems such as processor,Input/output and memory	50	2
C204.3	Illustrate hardwired control and microprogrammed control,pipelining,embedded and other computing systems	55	2
C204.4	Design and analyse simple arithmetic and logic units	50	2
Statements of Course Outcomes	**18CS35**	**Target(%)**	**BL**
C205.1	Design a software system, component, or process to meet desired needs within realistic constraints.	60	2

C205.2	Assess professional and ethical responsibility and Function on multi-disciplinary teams	60	2
C205.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice	60	2
C205.4	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems	60	2
Statements of Course Outcomes	**18CS36**	**Target(%)**	**BL**
C206.1	Illustrate applications of discrete structures logic,relations,functions,set theory,counting	70	1
C206.2	Describe different mathematical proof techniques	60	2
C206.3	Illustrate the use of graph theory in computer science	55	2
Statements of Course Outcomes	**18CSL37**	**Target(%)**	**BL**
C207.1	Use appropriate design equations / methods to design the given circuit	60	2
C207.2	Examine and verify the design of both analog and digital circuits using simulators	60	2
C207.3	Make us of electronic components, ICs, instruments and tools for design and testing of circuits for the given the appropriate inputs.	60	2
C207.4	Compile a laboratory journal which includes; aim, tool/instruments/software/components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings	60	3
Statements of Course Outcomes	**18CSL38**	**Target(%)**	**BL**
C208.1	Analyze and Compare various linear and non-linear data structures	70	3
C208.2	Code, debug and demonstrate the working nature of different types of data structures and their applications	70	3
C208.3	Implement, analyze and evaluate the searching and sorting algorithms	70	4
C208.4	Choose the appropriate data structure for solving real world problems	70	4
Statements of Course Outcomes	**18MAT41**	**Target(%)**	**BL**
C211.1	Use the concept of analytic function and complex potential to solve the problem	60	1,2,3
C211.2	Utilize conformal transformation and complex integral arising in aerofoil theory,	60	1,2,3
C211.3	Apply discrete and continuous probability distribution in analysing the probability	60	1,2,3
C211.4	Apply discrete and continuous probability distribution in analysing the probability	60	1,2,3
C211.5	Could act joint probability distribution and demonstrate the validity of testing of	60	1,2,3
Statements of Course Outcomes	**18CS42**	**Target(%)**	**BL**
C212.1	Describe computational solution to well-known problems like searching, sorting etc.	65	2
C212.2	Estimate the computational complexity of different algorithms.	70	2
C212.3	Devise an algorithm using appropriate design strategies for problem solving.	65	2
Statements of Course Outcomes	**18CS43**	**Target(%)**	**BL**
C213.1	Demonstrate need for OS and different types of OS.	65	2
C213.2	Apply suitable techniques for management of different resources.	70	2
C213.3	Use processor, memory, storage and file system commands.	65	2
C213.4	Realize the different concepts of OS in platform of usage through case studies.	60	2
Statements of Course Outcomes	**18CS44**	**Target(%)**	**BL**
C214.1	Describe the architectural features and instructions of ARM microcontroller.	60	2
C214.2	Apply the knowledge gained for programming ARM for different applications.	65	3
C214.3	Interface external devices and I/O with ARM microcontroller.	60	3
C214.4	Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.	65	3
C214.5	Develop the hardware/software co-design and firmware design approaches.	60	3
C214.6	Demonstrate the need of real time operating system for embedded system applications.	55	3
Statements of Course Outcomes	**18CS45**	**Target(%)**	**BL**

C215.1	Explain the object oriented and JAVA	50	2
C215.2	Develop computer programs to solve real world problems in Java	50	1
C215.3	Develop simple GUI interfaces for a computer program to interact with users and to understand the event GUI handling principles using Applets and Swings	50	2
Statements of Course Outcomes	**18CS46**	**Target(%)**	**BL**
C216.1	Explain the various components of data communication	60	2
C216.2	Explain the fundamentals of digital communication and switching	50	2
C216.3	Compare and contrast data link layer protocols.	60	4
C216.4	Summarize IEEE 802.xx standards	60	2
Statements of Course Outcomes	**18CSL47**	**Target(%)**	**BL**
C217.1	Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)	70	3
C217.2	Implement a variety of algorithms such assorting, graph related, combinatorial, etc., in a high level language.	65	3
C217.3	Analyze and compare the performance of algorithms using language features.	65	3
C217.4	Apply and implement learned algorithm design techniques and data structuresto solve real-world problems.	70	3
Statements of Course Outcomes	**18CSL48**	**Target(%)**	**BL**
C218.1	Develop and test program using ARM7TDMI/LPC2148	70	3
C218.2	Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using	70	3
C218.3	evaluation version of Embedded 'C' & .Keil Uvision-4 tool/compiler	70	3
Statements of Course Outcomes	**18CS51**	**Target(%)**	**BL**
C301.1	Define management, organization, planning, staffing.	70	2
C301.2	Define Directing and Controlling.	70	2
C301.3	Knowledge on Entrepreneur and Entrepreneurship	70	3
C301.4	Utilize the resources available effectively through ERP	70	3
C301.5	Make use of IPRs and institutional support in entrepreneurship	70	3
Statements of Course Outcomes	**18CS52**	**Target(%)**	**BL**
C302.1	Explain principles of application layer protocols	60	2
C302.2	Recognize transport layer services and infer UDP and TCP protocols	65	2
C302.3	Classify routers IP and routing Algorithm in network Layer	65	2
C302.4	Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard	60	2
C302.5	Describe Multimedia Networking and Network Management	60	2
Statements of Course Outcomes	**18CS53**	**Target(%)**	**BL**
C303.1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS	65	2
C303.2	Use Structured Query Language (SQL) for database manipulation	70	2
C303.3	Design and build simple database systems	65	2
C303.4	Develop application to interact with databases	65	2
Statements of Course Outcomes	**18CS54**	**Target(%)**	**BL**
C304.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation	60	2
C304.2	Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).	65	2
C304.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers	65	2
C304.4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness	60	2
C304.5	Classify a problem with respect to different models of Computation	60	2

Statements of Course Outcomes	18CS55	Target(%)	BL
C305.1	Demonstrate proficiency in handling of loops & creation of functions	70	2
C305.2	Identify the methods to create & manipulate lists , tuples and dictionaries	60	1
C305.3	Discover the commonly used operations involving regular expressions and files system	60	2
C305.4	Interpret the concepts of Object Oriented Programming as used in Python	60	2
C305.5	Determine the need for scraping websites and working with CSV , JSON and other file formats	60	3
Statements of Course Outcomes	**18CS56**	**Target(%)**	**BL**
C306.1	Explain Unix Architecture, File system and use of Basic Commands	70	2
C306.2	Illustrate Shell Programming and to write Shell Scripts	60	1
C306.3	Categorize, compare and make use of Unix System Calls	60	2
C306.4	Build an application/service over a Unix system	60	2
Statements of Course Outcomes	**18CSL57**	**Target(%)**	**BL**
C307.1	Analyze and Compare various networking protocols.	65	2
C307.2	Demonstrate the working of different concepts of networking.	65	2
C307.3	Implement, analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming language	60	2
Statements of Course Outcomes	**18CSL58**	**Target(%)**	**BL**
C308.1	Create, Update and query on the database	70	3
C308.2	Demonstrate the working of different concepts of DBMS	70	3
C308.3	Implement, analyze and evaluate the project developed for an application.	70	4
Statements of Course Outcomes	**18CS61**	**Target(%)**	**BL**
C311.1	Define System Software	70	1
C311.2	Familiarize with source file,object file & executable file structures & libraries	60	2
C311.3	Describe the front end & back end phases of compiler & their importance to Students	55	2
Statements of Course Outcomes	**18CS62**	**Target(%)**	**BL**
C312.1	Understand the basics and application of Computer graphics.	55	2
C312.2	Design and implement algorithms for 2D graphics primitives and attributes.	55	3
C312.3	Illustrate Geometric transformations on both 2D and 3D objects.	55	3
C312.4	Apply concepts of clipping and visible surface detection in 2D and 3D viewing, and Illumination Models.	55	3
C312.5	Decide suitable hardware and software for developing graphics packages using OpenGL.	55	3
Statements of Course Outcomes	**18CS63**	**Target(%)**	**BL**
C313.1	Develop HTML and CSS and semantics to build web pages	60	2
C313.2	Construct and visually format tables and forms using HTML and CSS	50	3
C313.3	Develop Client side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically	60	2
C313.4	Appraise the principles of object oriented development using PHP	60	3
C313.5	Develop Javascript frameworks like jQuery and Backbone which facilitates devloper to focus on core features	50	2
Statements of Course Outcomes	**18CS643**	**Target(%)**	**BL**
C314.1	Explain cloud computing virtualization and classify services of cloud computing	70	2
C314.2	Illustrate architecture and programming in cloud.	50	2
C314.3	Describe the platforms for development of cloud pplications and List the applications of cloud.	60	2
Statements of Course Outcomes	**18EE653**	**Target(%)**	**BL**
C315.1	Discuss causes of energy scarcity and its solution, energy resources and availability of renewable energy	60	2

C315.1	Outline energy from sun, energy reaching the Earth's surface and solar thermal energy applications	50	3
C315.1	Discuss types of solar collectors, their configurations, solar cell system, its characteristics and their applications	60	2
C315.1	Explain generation of energy from hydrogen, wind, geothermal system, solid waste and agriculture refuse	60	3
C315.1	Discuss production of energy from biomass, biogas	50	2
C315.1	Summarize tidal energy resources, sea wave energy and ocean thermal energy.	60	3
Statements of Course Outcomes	**18CSL66**	**Target(%)**	**BL**
C316.1	Implement and demonstrate lexers and parsers	70	3
C316.2	Evaluate memory managent algorithms	70	5
C316.3	To implement operating system algorithms	70	3
Statements of Course Outcomes	**18CSL67**	**Target(%)**	**BL**
C317.1	Apply the concepts of computer graphics	70	3
C317.2	Implement computer graphics applications using OpenGL	70	4
C317.3	Animate real world problems using OpenGL	70	4
Statements of Course Outcomes	**18CSL68**	**Target(%)**	**BL**
C318.1	Create test and debug android application by setting up android development environment	65	5
C318.2	Implement adaptive, responsive user interfaces that work on wide range of devices.	65	4
C318.3	Infer Long running task and background work in android applications	65	5
C318.4	Demonstrate methods in storing sharing and retrieving data in android apps	60	4
C318.5	Infer the role of permissions and security for android apps	60	5
Statements of Course Outcomes	**18CS71**	**Target(%)**	**BL**
C401.1	Remember and Understand the theory of Artificial intelligence and Machine Learning.	40	1,2
C401.2	Remember and Understand the Knowledge representation issues and concept learning	40	1,2
C401.3	Apply decision tree learning and artificial neural networks.	50	2,3
C401.4	Apply Bayesian learning using bayes theorem, naive bayes classifier and EM Algorithm	40	2,3
C401.5	Apply Instance based learning and reinforcement learning	50	2,3
Statements of Course Outcomes	**18CS72**	**Target(%)**	**BL**
C402.1	Interpret the impact and challenges posed by IoT networks leading to new architectural models	70	3
C402.2	Compare and contrast the deployment of smart objects and the technologies to connect them to network	70	3
C402.3	Appraise the role of IoT protocols for efficient network communication	70	4
C402.4	Elaborate the need for Data Analytics and Security in IoT	70	4
C402.5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry	70	4
Statements of Course Outcomes	**18CS734**	**Target(%)**	**BL**
C403.1	To study the concepts of menus,windows,interface	60	2
C403.2	To study about bussiness functions	60	2
C403.3	To study the characteristics and components of windows various controls for the windows	55	3
C403.4	To study about various problems in windows design with color, text, graphics	55	3
C403.5	To study the testing methods	60	1
Statements of Course Outcomes	**18CS745**	**Target(%)**	**BL**
C404.1	To understand the basic concepts of RPA	60	2

		65	2
C404.2	To Describe various components And platforms of RPA	60	3
C404.3	To Describe the various types of variables,control flow and data manipulation techniques	60	2
C404.4	To Understand various control techniques and OCR in RPA	60	3
C404.5	To Describe various types and statergies to handle exeptions		
Statements of Course Outcomes	**18EE754**	**Target(%)**	**BL**
C4051.1	Analyze about energy scenario nationwide and worldwide , also outline Energy Conservation Act and its features	60	2
C4051.2	Discuss load management techniques and energy efficiency	65	2
C4051.3	Understand the need of energy audit and energy audit methodology	60	3
C4051.4	Understand various pillars of electricity market design.	60	2
C4051.5	Conduct energy audit of electrical systems and buildings.	60	3
C4051.6	Show an understanding of demand side management and energy conservation.	60	3
Statements of Course Outcomes	**18ME751**	**Target(%)**	**BL**
C4052.1	Understand energy scenario, energy sources and their utilization	60	2
C4052.2	Understand various methods of energy storage, energy management and economic analysis.	65	2
C4052.3	Analyse the awareness about environment and eco system	60	3
C4052.4	Understand the environment pollution along with social issues and acts	60	2
Statements of Course Outcomes	**18CSL76**	**Target(%)**	**BL**
C406.1	Implement and Demonstrate AI algorithms	45	3
C406.2	Implement and Demonstrate ML algorithms	65	3
C406.3	Evaluate different algorithms	60	6
Statements of Course Outcomes	**18CSP77**	**Target(%)**	**BL**
C407.1	Identify the problem to provide solution through technmology	80	2
C407.2	Analyze literature about emerging trending technology and research concept	70	3
C407.3	Illustrate different solution for the new concept on innovation going on related to societal ,environmental and technology	70	2
Statements of Course Outcomes	**18CS81**	**Target(%)**	**BL**
C411.1	Interpret the impact and chalenge posed by IOT network	70	3
C411.2	compare and contrast the deployment of smart objects and the technologies to connect them to network	65	3
C411.3	Appraise the role of IOT protocol for efficient network communication	70	4
C411.4	Elaborate the need for data analytics and security in IOT	65	4
C411.5	Illustrate different sensor technologies for sensing real wporld entities and identify the application of IoT in industry	70	4
Statements of Course Outcomes	**18CS822**	**Target(%)**	**BL**
C412.1	Recall and Identify key challenges in managing information and analyze different storage networking technology	40	2
C412.2	Interpret the RAID, Raid level Intelligent storage systems, SAN and FC SAN	40	1
C412.3	Examine emerging technologies including IP-SAN, NAS-I/O operations and its concepts	40	2
C412.4	Examine Business continuity concept, illustrate archive and backup in NAS environment	45	3
C412.5	Illustrate Various Local and Remote replication techniques and Interpret the concept of saving storage infrastructure.	40	2
Statements of Course Outcomes	**18CSP83**	**Target(%)**	**BL**
C413.1	Formulate the problem and determine the scope of the solution chosen	80	2
C413.2	Determine dissect and estimate the parameters required in the solution with modern engineering and IT tools	80	3
C413.3	Evaluate the solution with help of data objective function by using appropriate performance metrics	80	3

Statements of Course Outcomes	18CSS84	Target(%)	BL
C414.1	Ability to identify state of the art and futuristic technologies through self motivation and trough collaboration with others	80	2
C414.2	Ability to conduct a detailed literature survey and self study to completely understand the intricacies of the chosen topic	80	3
C414.3	Ability to conceptualize solutions built using state of the art technologies in terms of their architecture,deign,deployment	80	3
C414.4	Ability to identify the scope and limitations of specific technology in terms of their applicability along with a visualization of the means to grow specific technology	80	3
C414.5	Ability to create comprehensive technical reports using relevant tools and to make oral presentation of technical topics with adherence to timeliness ,clarity and such other soft skills alongside a presentable attitude and behaviour	80	2

Statements of Course Outcomes	18CSI85	Target(%)	BL
C415.1	Get exposure to corporate world and build relevant abilities	80	3
C415.2	Shows affinity towards learning the latest tools in the industry	80	4
C415.3	Demonstrate the ability to apply knowledge and design real life problems solutions through latest technology	80	5
C415.4	Communicate effectively and write quality technical reports	80	4

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COURSE OUTCOMES

1 st SEM-Physics cycle

Sl. No	Subject Name	Subject Code		Course Outcomes(CO)
1	calculus and linear Algebra	18MAT11	CO1	Apply the knowledge of calculus to solve problems related to polar curves and its in determining the bentness of a curve.
			CO2	Learn the notion of partial differentiation to calculate rates of changes of multivariate function and solve problems related to composite functions and jacobians.
			CO3	Evaluate double and triple integrals, Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes
			CO4	Solve first order linear and nonlinear differential equation analytically using standard methods.
			CO5	Make use of matrix theory for solving system of linear equation and compute Eigen values and Eigen vector required for matrix diagonalization process.
2	Engineering Physics	18PHY12	CO1	Understand various types of oscillations and their implications, the role of Shock waves in various fields.
			CO2	Recognize the elastic properties of materials for engineering
			CO3	Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication
			CO4	Compute Eigen values, Eigen functions for a particle using Time independent 1-D Schrodinger's wave equation. Apprehend the principle of laser, working of different types of lasers and applications
			CO5	Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models
3	Basic Electrical engineering	18ELE13	CO1	Analyse to Ac and Dc circuits
			CO2	Explain the principle of operation and construction of single phase transformers
			CO3	Explain the principle of operation and construction of DC machine and synchronous machines
			CO4	Explain the principle of operation and construction of three phase induction motors
			CO5	Discuss the concept of electrical wiring circuit protecting devices and earthing
4	Elements of Civil Engineering & Mechanics	18CIV14	CO1	Mention the applications of various fields of Civil Engineering.
			CO2	Compute the resultant of given force system subjected to various loads.
			CO3	Comprehend the action of Forces, Moments and other loads on systems ofrigid bodies and compute the reactive forces that develop as a result of theexternalloads.
			CO4	Locate the Centroid and compute the Moment of Inertia of regular andbuilt-upsections
			CO5	Express the relationship between the motion of bodies and analyze thebodiesinmotion

5	Engineering Graphics	18EGDL15	CO1	Prepare engineering drawings as per BIS conventions mentioned in the relevant codes.
			CO2	Produce computer generated drawings using CAD software
			CO3	Use the knowledge of orthographic projection to read engineering information/concepts and present the same in the form of drawings
			CO4	Develop isometric drawings of simple objects reading the orthographic projections of those objects
			CO5	Make use of matrix theory for solving system of linear equation and compute Eigen values and Eigen vector required for matrix diagonalization process.
6	Engineering Physics Lab	18PHYL16	CO1	Recall the concepts of interference of light, diffraction of light, Fermi energy
			CO2	Understand the principles of operations of optical fibers and semiconductor devices such as photodiode, and NPN transistor, and frequency response of LCR circuits
			CO3	Determine elastic modulii and moment of inertia of given materials with the help of suggested procedures
			CO4	Gain practical knowledge of Magnetic field intensity due to current and spring constant of a spring.
			CO5	Understand the importance of measurement procedure, honest recording and representing the data, reproduction of final results
7	Basic Electrical Engg. Lab	18ELEL17	CO1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory
			CO2	Compare power factor of lamps.
			CO3	Determine impedance of an electrical circuit and power consumed in a three phase load
			CO4	Determine earth resistance and understand two way and three way control of lamps
8	Technical English	18EGH18	CO1	Use grammatical English and essentials of language skills and identify the nuances phonetics, intonation and flawless pronunciation
			CO2	Implement English vocabulary at command and language proficiency
			CO3	Identify common errors in spoken and written communication
			CO4	Understand and improve the non verbal communication and kinesics
			CO5	Perform well in campus recruitment, engineering and all other general competitive exams

HOD 30/12/2020

HEAD OF DEPARTMENT
Physics
DBIT BANGALORE - 560 074

PRINCIPAL 30-12-2020

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I-sem Chemistry cycle

1	Advanced Calculus and Numerical Methods	18MAT11	CO1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the lengths of a curve.
			CO2	Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobians.
			CO3	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
			CO4	Solve first order linear/nonlinear differential equation analytically using standard methods
			CO5	Make use of matrix theory for solving system of linear equations and compute eigen values and eigenvectors required for matrix diagonalization process.
2	Engineering Chemistry	18CHE12	CO1	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy system.
			CO2	Causes and effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion,wear,tear,impact etc. by electroplating and electroless plating.
			CO3	Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
			CO4	Enviromental pollution, waste management and water chemistry.
			CO5	Different techniques of instrumental methods of analysis. Fundamental principles of nano materials.
3	C Programming for Problem Solving	18CPS13	CO1	Illustrate simple algorithams from thew different domains such as mathematics , Physics, etc.
			CO2	Construct a programming solution to the given problem using C
			CO3	Identify and correct the syntax and logical errors in C programs.
			CO4	Modularize the given problem using functions & structures.
4	Basic Electronics	18ELN14	CO1	Describe the operations of diodes, BJT, FET and Operational Amplifiers.
			CO2	Design and explain the construction of rectifiers, regulators, amplifiers and oscillators.
			CO3	Describe general operating principals of SCRs and its apllication.
			CO4	explain the different number system and thair conversions and construct simple combinational and sequential logic circuits suing Flip-Flops
			CO5	Describe the basic principle of operation of communication system and mobile phones.
5	Elements of Mechanical Engineering	18ME15	CO1	Identify different sources of energy, their conversion process and also describe the basic concepts thermodynamics and solving simple numerical problems on steam.
			CO2	Explain the working principle of steam boilers, hydraulic Turbines & pumps.
			CO3	Demonstrate the working principles of an I.C Engine, Refrigeration, air conditioning and also calculate the performance parameters of an I. C engine.
			CO4	Recognize & Classify the various engineering materials, metal joining processes and power transmission elements. Also solve simple numerical on power transmission elements

			CO5	Describe the working of conventional machine Tools, Machining processes and the advanced manufacturing systems.
6	Engineering Chemistry Laboratory	18CHEL16	C_1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
			CO2	Carrying out different types of titration for estimation of concerned in materials using comparatively more quantities of materials involved for good results.
7	C Programming Laboratory	18CPL17	CO1	Write Algorithms,flowchart and program for simple problems
			CO2	Correct syntax and logical errors to execute a program.
			CO3	Write iterative and wherever possible recursive programs.
			CO4	Demonstrate use of functions, arrays, strings,structures and pointers in problem solving.
8	Technical English-I II	18EGH18	CO1	Use grammatical English and essentials of language skills and identify the nuances phonetics, intonation and flawless pronunciation
			CO2	Implement English vocabulary at command and language proficiency
			CO3	Identify common errors in spoken and written communications
			CO4	Understand and improve the non verbal communication and kinetics
			CO5	Perform well in campus recruitment, engineering and all other general competitive exams

HOD 30/12/2020

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PRINCIPAL 30/12/2020

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2 nd SEM C- Cycle

1	Advanced Calculus and Numerical Methods	18MAT21	CO1	Solve differential equation of electric circuits, forced oscillation of mass spring and elementary heat transfer.
			CO2	Solve Partial differential equations, fluid mechanics, electromagnetic theory and heat transfer. Solution of Heat and Wave Equation
			CO3	Evaluate double and triple integrals to find the area , volume , mass and moment of Inertia of plane and solid region.
			CO4	Use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows.
			CO5	Use Laplsce transforms to determine general or complete solution to linear ordinary differential equation.
2	Engineering Chemistry	18CHE22	CO1	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy system.
			CO2	Causes and effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion,wear,tear,impact etc. by electroplating and electroless plating.
			CO3	Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
			CO4	Enviromental pollution, waste management and water chemistry.
			CO5	Different techniques of instrumental methods of analysis. Fundamental principles of nano materials.
3	C Programming for Problem Solving	18CPS23	CO1	Illustrate simple algorithams from thew different domains such as mathematics , Physics, etc.
			CO2	Construct a programming solution to the given problem using C
			CO3	Identify and correct the syntax and logical errors in C programs.
			CO4	Modularize the given problem using functions & structures.
4	Basic Electronics	18ELN24	CO1	Describe the operations of diodes, BJT, FET and Operational Amplifiers.
			CO2	Design and explain the construction of rectifiers, regulators, amplifiers and oscillators.
			CO3	Describe general operating principals of SCRs and its apllication.
			CO4	explain the different number system and thair conversions and construct simple combinational and sequential logic circuits suing Flip-Flops
			CO5	Describe the basic principle of operation of communication system and mobile phones.
			CO1	Identify different sources of energy, their conversion process and also describe the basic concepts thermodynamics and solving simple numerical problems on steam.

5	Engineering Graphics	18EGDL25	CO5	Express the relationship between the motion of bodies and analyze the bodies in motion
			CO1	Prepare engineering drawings as per BIS conventions mentioned in the relevant codes.
			CO2	Produce computer generated drawings using CAD software
			CO3	Use the knowledge of orthographic to represent engineering information/concepts and present the same in the form of drawings
			CO4	Develop isometric drawings of simple objects reading the orthographic projections of those objects
			CO5	Make use of matrix theory for solving system of linear equation and compute Eigen values and Eigen vector required for matrix diagonalization process.
6	Engineering Physics Lab	18PHYL26	CO1	Recall the concepts of interference of light, diffraction of light, Fermi energy
			CO2	Understand the principles of operations of optical fibers and semiconductor devices such as photodiode, and NPN transistor, and frequency response of LCR circuits
			CO3	Determine elastic modulii and moment of inertia of given materials with the help of suggested procedures
			CO4	Gain practical knowledge of Magnetic field intensity due to current and spring constant of a spring.
			CO5	Understand the importance of measurement procedure, honest recording and representing the data, reproduction of final results
7	Basic Electrical Engg. Lab	18ELEL27	CO1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory
			CO2	Compare power factor of lamps.
			CO3	Determine impedance of an electrical circuit and power consumed in a three phase load
			CO4	Determine earth resistance and understand two way and three way control of lamps
8	Technical English	18EGH28	CO1	Identify common errors in spoken and written communication
			CO2	Get familiar with English vocabulary and language proficiency
			CO3	Improve nature and style of sensible writing and acquire employment and workplace communication skills
			CO4	Improve their technical communication skills through technical reading and writing practices
			CO5	Perform well in campus recruitment, engineering and all other general competitive exams.

HOD 25/05/21

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Kumbalagodu, Mysore Road,
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COURSE OUTCOMES

II Sem P- Cycle

Sl. No	Subject Name	Subject Code		Course Outcomes(CO)
1	Calculus and linear Algebra	18MAT21	CO1	Solve differential equation of electric circuits, forced oscillation of mass spring and elementary heat transfer
			CO2	Solve Partial differential equations, fluid mechanics, electromagnetic theory and heat transfer. Solution of Heat and Wave Equation
			CO3	Evaluate double and triple integrals to find the area , volume , mass and moment of Inertia of plane and solid region.
			CO4	Use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows.
			CO5	Use Laplace transforms to determine general or complete solution to linear ordinary differential equation.
2	Engineering Physics	18PHY22	CO1	Understand various types of oscillations and their implications, the role of Shock waves in various fields.
			CO2	Recognize the elastic properties of materials for engineering
			CO3	Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication
			CO4	Compute Eigen values, Eigen functions for a particle using Time independent 1-D Schrodinger's wave equation. Apprehend the principle of laser, working of different types of lasers and applications
			CO5	Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models
3	Basic Electrical engineering	18ELE23	CO1	Analyse to Ac and De circuits
			CO2	Explain the principle of operation and construction of single phase transformers
			CO3	Explain the principle of operation and construction of DC machine and synchronous machines
			CO4	Explain the principle of operation and construction of three phase induction motors
			CO5	Discuss the concept of electrical wiring circuit protecting devices and earthing
4	Elements of Civil Engineering & Mechanics	18CIV24	CO1	Mention the applications of various fields of Civil Engineering.
			CO2	Compute the resultant of given force system subjected to various loads.
			CO3	Comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads.
			CO4	Locate the Centroid and compute the Moment of Inertia of regular and built-up sections

5	Engineering Graphics	18EGDL25	CO5	Express the relationship between the motion of bodies and analyze the bodies in motion
			CO1	Prepare engineering drawings as per BIS conventions mentioned in the relevant codes.
			CO2	Produce computer generated drawings using CAD software
			CO3	Use the knowledge of orthographic to represent engineering information/concepts and present the same in the form of drawings
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			CO5	Perform well in campus recruitment, engineering and all other general competitive exams.

25/05/21

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Department of Civil Engineering
3.1.1. Course Outcomes (Cos)
BATCH-2018

Course code: 18CV31	Course: Transform Calculus, Fourier Series and Numerical Techniques
Semester: III	Year of Study: 2019-2020
	After studying this course students are able to
18C201.1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.
18C201.2	Demonstrate Fourier series to study the behaviors of periodic functions and their applications in system communications, digital signal processing and field theory.
18C201.3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
18C201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
18C201.5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

Course code: 18CV32	Course: Strength of materials
Semester: III	Year of Study: 2019-2020
	After studying this course students are able to
18C202.1	To evaluate the basic concepts of the stresses and strains for different materials and strength of structural elements.
18C202.2	To evaluate the development of internal forces and resistance mechanism for one dimensional and two-dimensional structural elements.
18C202.3	To analyse different internal forces and stresses induced due to representative loads on structural elements.
18C202.4	To evaluate slope and deflections of beams.
18C202.5	To evaluate the behavior of torsion members, columns and struts.

Course code: 18CV33	Course: Fluid Mechanics
Semester: III	Year of Study: 2019-2020
	After studying this course students are able to
18C203.1	Possess a sound knowledge of fundamental properties of fluids and fluid Continuum
18C203.2	Compute and solve problems on hydrostatics, including practical applications
18C203.3	Apply principles of mathematics to represent kinematic concepts related to fluid flow
18C203.4	Apply fundamental laws of fluid mechanics and the Bernoulli's principle for practical applications
18C203.5	Compute the discharge through pipes and over notches and weirs

Course code: 18CV34	Course: Building Materials and Construction
Semester: III	Year of Study: 2019-2020
	After studying this course students are able to
18C204.1	Select suitable materials for buildings and adopt suitable construction techniques.
18C204.2	Decide suitable type of foundation based on soil parameters
18C204.3	Supervise the construction of different building elements based on suitability
18C204.4	Exhibit the knowledge of building finishes and form work requirements
18C204.5	Decide suitable type of paint and varnishes

Course code: 18CV35	Course: Basic Surveying
Semester: III	Year of Study: 2019-2020
After studying this course students are able to	
18C205.1	Possess a sound knowledge of fundamental principles Geodetics
18C205.2	Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
18C205.3	Capture geodetic data to process and perform analysis for survey problems]
18C205.4	Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours

Course code: 18CV36	Course: Engineering Geology
Semester: III	Year of Study: 2019-2020
After studying this course students are able to	
18C206.1	Apply geological knowledge in different civil engineering practice.
18C206.2	Students will acquire knowledge on durability and competence of foundation rocks, and confidence enough to use the best building materials.
18C206.3	Civil Engineers are competent enough for the safety, stability, economy and life of the structures that they construct.
18C206.4	Able to solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems.
18C206.5	Intelligent enough to apply GIS, GPS and remote sensing as a latest tool in different civil engineering construction.

Course code: 18CVL37	Course: Computer Aided Building Planning and Drawing
Semester: III	Year of Study: 2019-2020
After studying this course students are able to	
18C207.1	Prepare, read and interpret the drawings in a professional set up.
18C207.2	Know the procedures of submission of drawings and Develop working and submission drawings for building.
18C207.3	Plan and design a residential or public building as per the given requirements.

Course code: 18CVL38	Course: Building Materials Testing Laboratory
Semester: III	Year of Study: 2019-2020
After studying this course students are able to	
17C208.1	Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.
17C208.2	Identify, formulate and solve engineering problems of structural elements subjected to flexure.
17C208.3	Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.

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Department of Civil Engineering

Course code: 18MAT41	Course: Complex Analysis, Probability and Statistical Methods
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C211.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
18C211.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing
18C211.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field
18C211.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
18C211.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis

Course code: 18CV42	Course: Analysis of Determinate Structures
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C212.1	Evaluate the forces i n determinate trusses by method of joints and sections.
18C212.2	Evaluate the deflection of cantilever, simply supported and overhanging beams by different methods
18C212.3	Understand the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames.
18C212.4	Determine the stress resultants in arches and cables.
18C212.5	Understand the concept of influence lines and construct the ILD diagram for the moving loads.

Course code: 18CV43	Course: Applied Hydraulics
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C213.1	Apply dimensional analysis to develop mathematical modeling and compute the parametric values in prototype by analyzing the corresponding model parameters
18C213.2	Design the open channels of various cross sections including economical channel sections
18C213.3	Apply Energy concepts to flow in open channel sections, Calculate Energy dissipation.
18C213.4	Compute water surface profiles at different conditions
18C213.5	Design turbines for the given data, and to know their operation characteristics under different operating conditions

Course code: 18CV44	Course: Concrete Technology
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C214.1	Relate material characteristics and their influence on microstructure of concrete
18C214.2	Distinguish concrete behavior based on its fresh and hardened state
18C214.3	Illustrate proportioning of different types of concrete mixes required fresh and hardened properties using professional codes
18C214.4	Understand special concrete , their applications for practical purpose

Course code: 18CV45	Course: Advanced Surveying
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C215.1	Apply the knowledge of geometric principles to arrive at surveying problems
18C215.2	Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.
18C215.3	Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments;
18C215.4	Design and implement the different types of curves for deviating type of alignments.

Course code: 18CV46	Course: water supply and treatment engineering
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C216.1	Estimate average and peak water demand for a community.
18C216.2	Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.
18C216.3	Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.
18C216.4	Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards

Course code: 18CVL47	Course: ENGINEERING GEOLOGY LABORATORY
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C217.1	The students able to identify the minerals, rocks and utilize them effectively in civil engineering practices
18C217.2	The students will interpret and understand the geological conditions of the area for implementation of civil engineering projects
18C217.3	The students will interpret subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone by using geophysical methods
18C217.4	The students will learn the techniques in the interpretation of LANDSAT Imageries to find out the lineaments and other structural features for the given area
18C217.5	The students will be able to identify the different structures in the field.

Course code: 18CVL48	Course: fluid mechanics and hydraulic machines laboratory
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C218.1	Properties of fluids and the use of various instruments for fluid flow measurement.
18C218.2	Working of hydraulic machines under various conditions of working and their characteristics.

Course code: 18CPC49	Course: fluid mechanics and hydraulic machines laboratory
Semester: IV	Year of Study: 2019-2020
After studying this course students are able to	
18C219.1	Have constitutional knowledge and legal literacy.
18C219.2	Understand Engineering and Professional ethics and responsibilities of Engineers.
18C219.3	Understand the the cybercrimes and cyber laws for cyber safety measures

Course code: 18CV51	**Course: Construction Management And Entrepreneurship**
Semester: V	**Year of Study: 2020-2021**
After studying this course students are able to	
18C301.1	Prepare a project plan based on requirements and prepare schedule of a project by understanding the activities and their sequence.
18C301.2	Understand labor output, equipment efficiency to allocate resources required for an activity / project to achieve desired quality and safety.
18C301.3	Analyze the economics of alternatives and evaluate benefits and profits of a construction activity based on monetary value and time value.
18C301.4	Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.

Course code: 18CV52	**Course: Analysis Of Indeterminate Structures**
Semester: V	**Year of Study: 2020-2021**
After studying this course students are able to	
18C302.1	Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
18C302.2	Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method
18C302.3	Construct the bending moment diagram for beams and frames by Kani's method.
18C302.4	Construct the bending moment diagram for beams and frames using flexibility method
18C302.5	Analyze the beams and indeterminate frames by system stiffness method.

Course code:18CV53	**Course: Design Of RC Structural Elements**
Semester: V	**Year of Study: 2020-2021**
After studying this course students are able to	
18C303.1	Understand the design philosophy and principles.
18C303.2	Solve engineering problems of RC elements subjected to flexure, shear and torsion.
18C303.3	Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings.
18C303.4	Owns professional and ethical responsibility.

Course code: 18CV54	**Course: Basic Geotechnical Engineering**
Semester: V	**Year of Study: 2020-2021**
After studying this course students are able to	
18C304.1	Ability to plan and execute geotechnical site investigation program for different civil engineering projects
18C304.2	Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
18C304.3	Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
18C304.4	Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
18C304.5	Capable of estimating load carrying capacity of single and group of piles

Course code: 18CV55	Course: Municipal Wastewater Engineering
Semester: V	Year of Study: 2020-2021
After studying this course students are able to	
18C305.1	Select the appropriate sewer appurtenances and materials in sewer network.
18C305.2	Design the sewers network and understand the self-purification process in flowing water.
18C305.3	Design the varies physic- chemical treatment units
18C305.4	Design the various biological treatment units
18C305.5	Design various AOPs and low-cost treatment units.

Course code: 18CV56	Course: Highway Engineering
Semester: V	Year of Study: 2020-2021
After studying this course students are able to	
18C306.1	Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.
18C306.2	Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.
18C306.3	Design road geometrics, structural components of pavement and drainage.
18C306.4	Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Course code: 18CVL57	Course: Surveying Practice
Semester: V	Year of Study: 2020-2021
After studying this course students are able to	
18C307.1	Apply the basic principles of engineering surveying and for linear and angular measurements.
18C307.2	Comprehend effectively field procedures required for a professional surveyor.
18C307.3	Use techniques, skills and conventional surveying instruments necessary for engineering practice.

Course code: 18CVL58	Course: Concrete And Highway Materials Laboratory
Semester: V	Year of Study: 2020-2021
After studying this course students are able to	
18C308.1	Able to interpret the experimental results of concrete and highway materials based on laboratory tests.
18C308.2	Determine the quality and suitability of cement.
18C308.3	Design appropriate concrete mix Using Professional codes
18C308.4	Determine strength and quality of concrete.
18C308.5	Evaluate the strength of structural elements using NDT techniques Test the soil for its suitability as sub grade soil for pavements

Course code: 18CIV59	Course: Environmental Studies
Semester: V	Year of Study: 2020-2021
After studying this course students are able to	
18C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
18C309.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
18C309.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
18C309.4	Apply their ecological knowledge to illustrate global environmental issues
18C309.5	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues

Course code: 18CV61	Course: Design Of Steel Structural Elements
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C311.1	Possess knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.
18C311.2	Understand the Concept of Bolted and Welded connections.
18C311.3	Understand the Concept of Design of compression members, built-up columns and columns splices.
18C311.4	Understand the Concept of Design of tension members, simple slab base and gusseted base.
18C311.5	Understand the Concept of Design of laterally supported and un-supported steel beams.

Course code: 18CV62	Course: Applied Geotechnical Engineering
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C312.1	Ability to plan and execute geotechnical site investigation program for different civil engineering projects
18C312.2	Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
18C312.3	Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
18C312.4	Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
18C312.5	Capable of estimating load carrying capacity of single and group of piles

Course code:18CV63	Course: Hydrology And Irrigation Engineering
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C313.1	Understand the importance of hydrology and its components.
18C313.2	Measure precipitation and analyze the data and analyze the losses in precipitation.
18C313.3	Estimate runoff and develop unit hydrographs.
18C313.4	Find the benefits and ill-effects of irrigation ,also the quantity of irrigation water and frequency of irrigation for various crops.
18C313.5	Find the canal capacity, design the canal and compute the reservoir capacity.

Course code:18CV644	Course: Ground Improvement Techniques
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C314.1	Give solutions to solve various problems associated with soil formations having less strength.
18C314.2	Use effectively the various methods of ground improvement techniques depending upon the requirements
18C314.3	utilize properly the locally available materials and techniques for ground improvement so that economy in the design of foundations of various civil engineering structures

Course code: 18ME652	Course: World Class Manufacturing
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C315.1	Understand the basics of world class manufacturing & recent trends in manufacturing.
18C315.2	Understand Customization of product for manufacturing
18C315.3	Understand the implementation of new technologies & compare the existing industries with WCM industries.

Course code: 18CVL66	Course: Software Application Laboratory
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C316.1	Analysis of plane trusses, continuous beams, portal frames , multistory structure by using Staad pro software
18C316.2	Project planning and scheduling of a building project using any project management software
18C316.3	GIS applications for creation of map

Course code: 18CVL67	Course: Environmental Engineering Laboratory
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C317.1	Acquire capability to conduct experiments and estimate the concentration of different parameters
18C317.2	Compare the result with standards and discuss based on the purpose of analysis.
18C317.3	Determine type of treatment, degree of treatment for water and waste water.
18C317.4	Determine type of treatment, degree of treatment for waste water.
18C317.5	Identify the parameter to be analyzed for the student project work in environmental stream

Course code: 18CVEP68	Course: Extensive Survey Project
Semester: VI	Year of Study: 2020-2021
After studying this course students are able to	
18C318.1	Apply Surveying knowledge and tools effectively for the projects
18C318.2	Understanding Task environment, Goals, responsibilities, Task focus, working in Teams towards common goals, Organizational performance expectations, technical and behavioral competencies.
18C318.3	Application of individual effectiveness skills in team and organizational context, goal setting, time management, communication and presentation skills.
18C318.4	Professional etiquettes at workplace, meeting and general
18C318.5	Establishing trust based relationships in teams & organizational environment
18C318.6	Orientation towards conflicts in team and organizational environment, Understanding sources of conflicts, Conflict resolution styles and techniques

Course code:18CV71	**Course: Quantity Surveying And Contract Management**
Semester: VII	**Year of Study: 2021-2022**
After studying this course students are able to	
18C402.1	Taking out quantities and work out the cost and preparation of abstract for the estimated cost for various civil engineering works.
18C402.2	Prepare detailed and abstract estimates for various road works, structural works and water supply and sanitary works.
18C402.3	Prepare the specifications and analyze the rates for various items of work.
18C402.4	Assess contract and tender documents for various construction works.
18C402.5	Prepare valuation reports of buildings.

Course code: 18CV72	**Course: Design Of RCC And Steel Structures**
Semester: VII	**Year of Study: 2021-2022**
After studying this course students are able to	
18C402.1	Students will acquire the basic knowledge in design of RCC and Steel Structures.
18C402.2	Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members

Course code: 18CV732	**Course: Air Pollution And Control**
Semester: VII	**Year of Study: 2021-2022**
After studying this course students are able to	
17C403.1	Identify the major sources of air pollution and their effects on health and environment
17C403.2	Evaluate the dispersion of air pollutants in atmosphere and to develop air quality models
17C403.3	Ascertain and evaluate sampling techniques for atmospheric and stack pollutants
17C403.4	Choose and design control techniques for particulate and gaseous emissions
17C403.5	Understand the environmental laws and acts

Course code: 17CV741	**Course:** Design of Bridges
Semester: VII	**Year of Study: 2021-2022**
After studying this course students are able to	
18C404.1	Identify the major sources of air pollution and understand their effects on health and environment.
18C404.2	Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models.
18C404.3	Ascertain and evaluate sampling techniques for atmospheric and stack pollutants.
18C404.4	Choose and design control techniques for particulate and gaseous emissions

Course code:18CV745	**Course:** Urban Transportation and Planning
Semester: VII	**Year of Study: 2021-2022**
After studying this course students are able to	
18C405.1	Design, conduct and administer surveys to provide the data required for transportation planning.
18C405.2	Supervise the process of data collection about travel behavior and analyze the data for use in transport planning.
18C405.3	Develop and calibrate modal split, trip generation rates for specific types of land use developments.
18C405.4	Adopt the steps that are necessary to complete a long-term transportation plan.

Course code:18EE754	Course: Electrical Energy Conservation And Auditing
Semester: VII	Year of Study: 2021-2022
After studying this course students are able to	
18C406.1	Know about energy scenario nationwide and worldwide; outline Energy Conservation Act and its features
18C406.2	Discuss load management techniques and energy efficiency in electrical systems
18C406.3	Understand energy audit methodology and energy conservation
18C406.4	Understand various pillars of electricity market design and availability based tariff (ABT)

Course code: 18CVL76	Course: Computer Aided Detailing of Structures
Semester: VII	Year of Study: 2021-2022
After studying this course students are able to	
18C407.1	Detailing of RCC Structures
18C407.2	Detailing of Steel Structures

Course code: 18CVL77	Course: Geotechnical Engineering Laboratory
Semester: VII	Year of Study: 2021-2022
After studying this course students are able to	
18C407.1	Physical and index properties of the soil
18C407.2	Classify based on index properties and field identification
18C407.3	To determine OMC and MDD, plan and assess field compaction program
18C407.4	Shearstrengthandconsolidationparameterstoassessstrengthanddeformationcharacteristics
18C407.5	In-sit shear strength characteristics (SPT-Demonstration)

Course code: 18CVP78	Course: Project Work Phase - 1
Semester: VII	Year of Study: 2021-2022
After studying this course students are able to	
18C408.1	Identify the problem to provide solution through technology.
18C408.2	Analyze literature about emerging trending technology, research concept and determine the significance of gap in literature review.
18C408.3	Illustrate different solution for the new concept on innovation going on related to societal, environmental and technology.
18C408.4	Formulate aim & scope of the proposed project work and define objectives, methodology and expected outcomes.

Course code:18CV81	Course: Design Of Pre-Stress concrete
Semester: VIII	Year of Study: 2020-21
After studying this course students are able to	
18C411.1	Understand the requirement of PSC members for present scenario
18C411.2	Analyse the stresses encountered in PSC element during transfer and at working.
18C411.3	Understand the effectiveness of the design of PSC after studying losses
18C411.4	Capable of analyzing the PSC element and finding its efficiency.
18C411.5	Design PSC beam for different requirements.

Course code: 18CV825	Course: Pavement Design
Semester: VIII	Year of Study: 2020-21
After studying this course students are able to	
18C412.1	Systematically generate and compile required data's for design of pavement(highway and airfield)
18C412.2	Analyse stress, strain and deflection by Business's and Burmister's and Westergaard's theory.& design of flexible pavement conforming to IRC 37 2001
18C412.3	Understand flexible pavement failure,maintenance,and evaluation
18C412.4	Analyse stress,strain, and deflection and design of rigid pavement conforming to IRC 58-2001
18C412.5	Understand rigid pavement failure,maintenance and evaluation

Course code: 18CVP83	Course: Project Work Phase - 2
Semester: VIII	Year of Study: 2020-21
After studying this course students are able to	
18C413.1	Determine the parameters required in project work with usage of codal provision and modern software tools.
18C413.2	Implementation of the innovative concept and applying suitable methodology in project work.
18C413.3	Tabulate and discuss the results with respect to defined objectives by using appropriate performance metrics.

Course code: 18CVS84	Course: Technical Seminar
Semester: VIII	Year of Study: 2020-21
After studying this course students are able to	
18C414.1	Ability to identify the futuristic technologies through self-motivation for any topic of interest.
18C414.2	Ability to conduct a detailed literature survey and understand the concept of the chosen topic.
18C414.3	Ability to conceptualize solution built using various cutting edge technologies in terms of their planning, design and deployment.
18C414.4	Ability to identify the scope and limitations of specific technology in terms of their applicability along with visualization.
18C414.5	Ability to create comprehensive technical reports using relevant tools and to make oral presentation of technical topics with adherence to timeliness, clarity and such other soft skills alongside a presentable attitude and behavior.

Course code: 18CVI85	Course: Internship /Professional Practice
Semester: VIII	Year of Study: 2020-21
After studying this course students are able to	
18C415.1	Apply knowledge in relevant to the field and study through professional attitude towards work and responsibility.
18C415.2	Apply interpersonal communication skills with technical and non-technical staff to undertake lifelong learning as an individual in the work place.
18C415.3	Ability to use the techniques, skills and modern engineering tools necessary for civil engineering practices.

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