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ORIENTAL COLLEGE OF TECHNOLOGY, BHOPAL**Department of Basic Sciences**

Course Name: Engineering Chemistry (BT-101) Year of Study: 2021-22 (I & II SEMESTER)	
BT101.1	To study hardness of water and how to remove hardness and to make water fit for drinking
BT101.2	To study working of lubricants
BT101.3	To study polymers and their applications in day to day life
BT101.4	To study spectroscopic technique with their applications
BT101.5	To study about periodic properties of different elements in periodic table.

Course Name: Mathematics-I (BT-102) Year of Study: 2021-22 (I & II SEMESTER)	
BT-102.1	Apply fundamental theorems of calculus in solving Engineering problems
BT-102.2	Apply integral calculus to solve Beta and Gamma function and summation of series.
BT-102.3	Understand the concept of convergence of sequence & Fourier series.
BT-102.4	Analyze the concept of vector space and familiarize the student with functions of several variables that is essential in most branches of engineering.
BT-102.5	Describe the concept of matrix and their applications

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Department of Basic Sciences

Course Name: English for Communication (BT-103) Year of Study: 2021-22 (I & II SEMESTER)	
BT-103.1	Recapitulation of grammar concepts of students to improve their grammatical competence by understanding basic grammar principles and be able to apply the knowledge to synthesize and transform sentences.
BT-103.2	Interpret and summarize the lexical ability and comprehension skills. Understand and give an accurate account of authentic texts of a scientific nature and provide main conclusions.
BT-103.3	Understand and interpret the process of communication and become more articulate by applying the concepts learnt
BT-103.4	Analyze, plan and write technical definition and technical description.
BT-103.5	Convey precisely and unambiguously written communication by analyzing, interpreting and effectively communicating the information. Demonstrate employability skills for corporate as well as business correspondence.

Course Name: Basic Electrical & Electronics Engineering (BT-104) Year of Study: 2021-22 (I & II SEMESTER)	
BT-104.1	To understand the basic concepts of DC circuits and ability to analyze circuits using Kirchoff's voltage law, Kirchoff's current law, node analysis, mesh analysis, thevenin's & superposition principle.
BT-104.2	To understand the basic concepts of single phase and three phases AC circuit and analyze circuit using theoretical and practical approach.
BT-104.3	To gain knowledge of magnetic circuits and working principle, construction of transformer. Highlights the importance of transformer in transmission and distribution of power.
BT-104.4	To understand the construction, working principle of DC Machine & AC Machine.
BT-104.5	To understand basic concepts of digital electronics and Semiconductors, diodes and transistors configurations & their applications.

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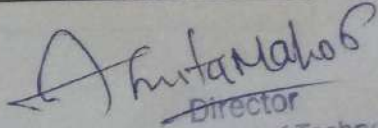


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Course Name: Engineering Graphics (BT-105) Year of Study: 2021-22 (I & II SEMESTER)	
BT-105.1	Understand that engineering graphics is a universal language of engineers of all fields.
BT-105.2	Recall the ideas and thoughts to others with the help of this language.
BT-105.3	Express the complete information about an object with exact dimension and full details.
BT-105.4	Visualize and imagine handling research projects of software industries.
BT-105.5	Understand the use of equipments/tools to prepare the drawings manually or with the aid of CAD software packages.

Course Name: Manufacturing Practices (BT-106) Year of Study: 2021-22 (I & II SEMESTER)	
BT-106.1	Use the techniques, skills, and modern engineering tools necessary for engineering practice
BT-106.2	Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to design & fabricate small components for their project work
BT-106.3	Design a system, component, or process to meet desired needs .ethical, health and safety, manufacturability, and sustainability
BT-106.4	Learn different applications, selection of a suitable technique for meeting a specific fabrication need.
BT-106.5	Get exposure to some of the advanced and latest manufacturing techniques being employed in the industry.


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Course Name: Engineering Physics (BT-201) Year of Study: 2021-22 (I & II SEMESTER)	
BT201.1	Describe the dual nature of particle and related concept at atomic and sub atomic level.
BT201.2	Illustrate concepts of wave theory of light and its applications.
BT201.3	Explain the concept of solid and its types of base of electricity conduction.
BT201.4	Discuss the fundamentals of LASER and structure of optical fiber.
BT201.5	Evaluate the mathematical problem related with electrodynamics.

Course Name: Mathematics-II (BT-202) Year of Study: 2021-22 (I & II SEMESTER)	
BT-202.1	Learn the basic concept of ordinary differential Equation, Exact differential Equation, LDE and HLDE.
BT-202.2	Illustrate the concept Second order differential Equations, Series Solution, Legendre's function and Bessel's function
BT-202.3	Understand the concept of Partial differential Equations for learning advanced Engineering Mathematics.
BT-202.4	Understand the analytic function and contour integration in engineering problems.
BT-202.5	Develop the concept of vector calculus and its application

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Course Name: Basic Mechanical Engineering (BT-203) Year of Study: 2021-22 (I & II SEMESTER)	
BT203.1	Know the several properties and compositions of the engineering to materials.
BT203.2	Understand measuring tool & its application in engineering field
BT203.3	Understand basic properties of fluid and hydraulic turbines
BT203.4	Know about boiler , thermodynamics law & its application in engineering fields
BT203.5	Know about I.C engines, steam engines & its application in engineering field

Course Name: Basic Civil & Engineering Mechanics (BT-204) Year of Study: 2021-22 (I & II SEMESTER)	
BT204.1	Understand various Building materials for construction.
BT204.2	Apply the Basic Information of surveying instruments.
BT204.3	Apply the Basic Information of Remote sensing Device.
BT204.4	Apply the principles of mechanics to Practical Engineering Problems.
BT204.5	Analyze the Centre of Gravity and Moment of Inertia.

Amita Mahor
Director

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ORIENTAL COLLEGE OF TECHNOLOGY, BHOPAL

Department of Basic Sciences

Course Name: Basic Computer Engineering (BT-205) Year of Study: 2021-22 (I & II SEMESTER)	
BT205.1	Introduce the computer, its hardware, software, Organization and working of basic Applications.
BT205.2	Demonstrate instructions to the computer to perform a specific task & introduce all of computer languages.
BT205.3	Make use of computer networks with the internet and be aware of different types of attacks and network security.
BT205.4	Explore the Database Management System with its properties and specifications.
BT205.5	Understand the overview of cloud computing and their services.

Course Name: Language Lab & Seminar (BT-206) Year of Study: 2021-22 (I & II SEMESTER)	
BT-206.1	Introduce himself and his family on professional grounds.
BT-206.2	Imbibe the ability of Public speaking, extempore and practice small conversations through Role Plays.
BT-206.3	Possess sound comprehension skills and gain proficiency in reading.
BT-206.4	Writing reviews and comments on the read material.
BT-206.5	Learn conversation through Role plays.

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Department of Basic Sciences

Course Name: Mathematics-III (BT-301) Year of Study: 2021-22 (I & II SEMESTER)	
BT-301.1	Acquire the Basic knowledge of Solution of polynomial and transcendental equations
BT-301.2	Analyze numerical differentiation & integration to solve engineering problems.
BT-301.3	Determine Ordinary differential equations for solving technical problems.
BT-301.4	Apply Transform Calculus to solve engineering problems.
BT-301.5	Describe concept of probability to solve the problems.

Course Name: Mathematics-III (BT-401) Year of Study: 2021-22 (I & II SEMESTER)	
BT-401.1	Acquire the Basic knowledge of Solution of polynomial and transcendental equations
BT-401.2	Analyze numerical differentiation & integration to solve engineering problems.
BT-401.3	Determine Ordinary differential equations for solving technical problems.
BT-401.4	Apply Transform Calculus to solve engineering problems.
BT-401.5	Describe concept of probability to solve the problems.

Anubhav
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ORIENTAL COLLEGE OF TECHNOLOGY, BHOPAL
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
Course Outcomes for Academic Session Jan- Jun 2021

Course Name: Energy & Environmental Engg. (ES-401)	
CO1	Understanding different renewable and non-renewable sources of energy.
CO2	Illustrate about mutual co relationship of organism. By carefully using the principles of ecology, they can learn to predict, extinguish, counteract and prevent potentially adverse effect.
CO3	Analyze impact of air pollution and sound pollution.
CO4	Aware about water and soil pollution and how it can be treated.
CO5	Realize urban problems and will be aware of waste management techniques.

Course Name: Signal and Systems (EC-402)	
CO1	Understanding the classification of various continuous and discrete time signals, systems and compute responses of continuous systems.
CO2	Analyze the impulse response and perform convolution for discrete time systems.
CO3	Apply z-transform for realization of discrete time system.
CO4	Evaluate the Fourier Series and Fourier Transform of discrete time signals.
CO5	Designing the Discrete Time systems by applying Sampling theorem.

Course Name: Analog Communication (EC-403)	
CO1	Apply concepts of signals and solve communication engineering Problems using the knowledge of time domain & frequency domain.
CO2	Analyze various amplitude modulation schemes for communication systems.
CO3	Analyze various angle modulation schemes for communication systems and various FM transmitters and receivers.
CO4	Categorize the various AM Receivers.
CO5	Compare the noise performance of various analog communication systems and calculate different type of noise.

Anuram
 Director

CO3	Develop frequency analysis of discrete time signals using DFS and DFT.
CO4	Evaluate efficient computation of the DFT using FFT and develop DIT and DIF algorithm.
CO5	Implementation of digital filters design techniques for FIR and IIR.

Course Name: Antenna and Wave Propagation (EC602)

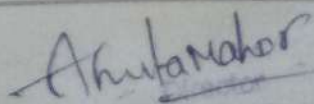
CO1	Apply the knowledge of electromagnetic theory on quarter wave monopole and Half wave dipole antennas.
CO2	Analyze the fundamentals of various performance parameters viz. antenna gain, VSWR etc.
CO3	Design different types of antennas for various applications.
CO4	Evaluate the radiation mechanism of various types of slot and aperture antennas.
CO5	Identify the atmospheric and terrestrial effects on radio wave propagation.

Course Name: Data Communication(EC603)

CO1	Understanding the Classification of Transmission modes and Line encoding
CO2	Applying the fundamentals to switching and OSI model.
CO3	Analyzing error detection and correction
CO4	Evaluate different Network protocols.
CO5	Identify networking devices and protocols

Course Name: Microcontroller & Embedded system (EC 604)

CO1	Apply the knowledge of microcontroller Interfacing for different applications and serial communication.
CO2	Analyze the fundamentals of instruction set, addressing modes and programming for 16-bit microcontroller (8096)
CO3	Differentiate between different type of embedded systems and general computing system based on major classifications.
CO4	Evaluate the different type of Embedded System Architecture radiation mechanism of various types of slot and aperture antennas.


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Course Name: Optical Fibre Communication (EC801)

CO1	Understand Optical Fiber Communication System and its parameters.
CO2	Analyze transmission characteristics of optical fiber
CO3	Understand the construction and operation of various optical sources and detectors.
CO4	Performance analysis of optical receivers and study of fiber joints
CO5	Brief introduction of optical fiber networks and amplifiers

Course Name: Artificial Intelligence and Signal Processing (EC-802(A))

CO1	Ability to develop a basic understanding of AI building blocks presented in intelligent agents.
CO2	Ability to choose an appropriate problem-solving method and knowledge representation technique.
CO3	Ability to analyze the strength and weaknesses of AI approaches to knowledge-intensive problem-solving.
CO4	Understand real time applications of Fourier transform.
CO5	Describe discrete time systems in terms of difference equations.

Course Name: Wireless Network (EC-803(A))

CO1	Review the concepts of wireless and mobile communication
CO2	Understand LTE and OFDM technologies for mobile telephony
CO3	Understand the basic concepts of wireless sensor network
CO4	Understand mobile networking and compare transport layer protocols for mobile and traditional networks
CO5	Understand the technology and standards of IoT, ZigBee

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ORIENTAL COLLEGE OF TECHNOLOGY, BHOPAL
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
Course Outcomes for Academic Session July- Dec 2020

Course Name: Mathematics – III (BT- 301)	
CO1	Apply the concept of Solution of polynomial and transcendental equations.
CO2	Solve problems related to Numerical Differentiation & Numerical integration.
CO3	Generalize the Ordinary differential equations to solve the equations.
CO4	Analyze the Laplace Transform to solve the engineering problem.
CO5	Describe Concept of Probability in solving comprehensive engineering problems

Course Name: Electronic Measurements and Instrumentation (EC-302)- Theory	
Course Name: Electronic Measurements and Instrumentation Lab (EC-302) Lab	
CO1	Understand the instrument suitable for specific measurements and explain errors in a measurement system.
CO2	Apply the knowledge of network theory to accurately find the values of R, L and C employing suitable bridges.
CO3	Analyzing the principles of different transducers for displacement, velocity, temperature measurement.
CO4	Evaluating various signals with the help of wave generators and display devices.
CO5	Designing different types of analog to digital converter and digital to analog converter.

Course Name : Digital System Design (EC-303)	
CO1	Understanding of various number systems useful for digital system operation.
CO2	Analyze, design and implement combinational logic circuits.
CO3	Analyze, design and implement sequential circuits.
CO4	Evaluating performance of various shift registers and counters.

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Course Name: Microprocessor and its Applications (EC501)	
CO1	Assess and solve basic binary math operations using the microprocessor and explain the microprocessor's and Microcontroller's internal architecture and its operation within the area of manufacturing and performance.
CO2	Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.
CO3	Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.
CO4	Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller.
CO5	Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.

Course Name: Digital Communication (EC502)	
CO1	Illustrate the concept of sampling of any signal and its reconstruction in accordance with sampling theorem.
CO2	Analyze the performance of analog and digital pulse modulation and demodulation techniques.
CO3	Apply sampling theorem for different digital modulation and demodulation techniques.
CO4	Evaluate optimum reception of digital signals with the help of digital modulation methods.
CO5	Design communication system with the help of source coding and channel coding scheme.

Course Name: Communication Networks and Transmission Lines (EC503)	
CO1	Understand different symmetrical and asymmetrical two port networks.
CO2	Apply network theory to design various types of Low pass, high pass, band pass and band elimination filters.
CO3	Analyzing different types of LC, RL, RC, and RLC network synthesis problems.
CO4	Develop the fundamentals of transmission lines.

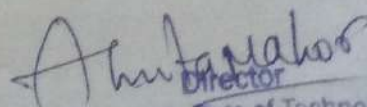
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CO5	Able to use basic flow controls (if-else, for, while).
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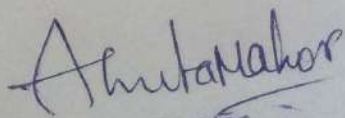
Course Name: Minor Project – I (EC508)	
CO1	Understand, plan and execute a minor project with team, using necessary literature survey.
CO2	Design an electronic system using appropriate hardware and software. Also various troubleshooting techniques are used in implementation of design.
CO3	Identify the modern tools and software required for the implementation of the project.
CO4	Prepare a technical report based on the minor project.
CO5	Communicate technical and general information by means of oral as well as written presentation skills with professionalism.

Course Name: VLSI Design (EC-701)	
CO1	Understanding the technology used in designing integrated circuits.
CO2	Apply the device modeling techniques in designing VLSI circuits.
CO3	Analyze the various levels of modeling BJT and MOSFET and enhance the performance of VLSI circuits by extracting parasitics.
CO4	Estimate the synthesis and simulation process in VLSI circuit using SPICE.
CO5	Design the structured digital circuits and system.

Course Name: Information Theory and Coding (EC702)	
CO1	Understanding the phenomenon of entropy, joint and conditional entropy, relative entropy, mutual information problems using probability.
CO2	Apply different Source coding techniques for Communication System Design.
CO3	Analyze Linear Block Codes, syndrome decoding, systematic block code and Hamming code techniques.


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CO4	Design web-based application using various internet protocols and services.
CO5	Use sensor technology and RFID and wireless networking for maintaining privacy and security concern in smart city and housing environmental considerations.
<p>Course Outcomes: Major Project-I EC-706</p>	
CO1	Apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study.
CO2	Demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study.
CO3	Use effectively oral, written and visual communication.
CO4	Identify and analyze problems creatively through sustained critical investigation.
CO5	Design the Layout and hardware of the proposed work.


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