SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
List of PSO's for all Deparment for AY 2017-18

Sr.No.	Name of Deparment	List Of PSO's
1	ELECTRONICS AND TELECOMMUNICATION ENGG	**PSO 1:** Apply fundamentals of electronics in various domains of analog and digital systems.
		PSO 2: Build a model by applying profound knowledge in Communication, Signal Processing, Image Processing and VLSI along with programming & simulation tools for research and advancement.
		PSO 3: Analyze and research appropriate technologies for implementation of the electronics and telecommunication engineering systems and exhibits the soft skills for the presentation of the systems.
2	COMPUTER ENGINEERING	**PSO 1: Professional Skills**: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity
		PSO 2: Problem-Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success
		PSO 3: Successful Career and Entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.
3	MECHANICAL ENGINEERING	**PSO 1:** Students should be able to solve problems in the field of design, thermal and Production Engineering.
		PSO 2: Students should be able to analyze mechanical systems and simulate using Software
		PSO 3: Students should be able to resolve issues related to renewable energy sources and contribute to reduce atmospheric pollution
4	CIVIL ENGINEERING	**PSO1** :The graduates will have the ability to plan, analyze, construct and maintain cost effective civil engineering structures.
		PSO2: The graduates will have the ability to take up employment, entrepreneurship, research and development for sustainable civil society.
		PSO3 :The graduates will have the ability to recognize the need of the hour like housing, sanitation, waste management, irrigation, use of renewable energy etc. for a sustainable environment.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
List of PO's for all Deparment for AY 2017-18

Sr.No	List of PO's
1	**PO1.Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	**PO**2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	**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.
4	**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.
5	**PO**5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6	**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.
7	**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.
8	**PO**8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	**PO**9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	**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.
11	**PO**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	**PO12. Life-long 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.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE　　　　　　　　　　**SEM: III**　　　　　　　　　　**SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	AAPPLIED MATHMATICS-III (ECC301)	Apply Laplace Transforms to solve Electronics & Telecommunication Engineering problems.
		Apply Inverse Laplace Transforms to solve Electronics & Telecommunication Engineering problems.
		Construct Fourier series & apply it in Telecomunication Engineering.
		Evaluate area &volume & identify & model the problems in the field of Electronics & Telecom Engineering & solve it.
		Evaluate area &volume & identify & model the problems in the field of Electronics & Telecom Engineering & solve it.
		Select and solve complex Engineering Problems.
2	ELECTRONIC DEVICES AND CIRCUITS-I (ECC302)	Outline the Active and Passive Elements, Diode
		Design of Rectifiers, Filters &Regulator
		Define operation of BJT,FET& Analyze BJT,FET
		Analyze Small Signal analysis, Transistor Modeling
		Evaluate the high frequency response of BJT and FET
		Design single stage Amplifier.
3	DIGITAL SYSTEM AND DESIGN (ECC303)	Develop a digital logic and apply it to solve real life problems.
		Analyze, design and implement combinational logic circuits.
		Classify different semiconductor memories.
		Analyze, design and implement sequential logic circuits.
		Analyze digital system design using PLD.
		Construct and simulate combinational and sequential circuits using VHDL systems.
4	CIRCUIT THEORY AND NETWORKS (ECC304)	Analyze circuits by using network theorems
		Analyze and evaluate network topologies for a circuit
		Analysis of time and frequency domain with different methods
		Analysis of circuit network functions
		Determine various parameters of two port network
		Design the circuit network
5	ELECTRONIC INSTRUMENTS AND CONTROL (ECC305)	Discuss basic Concept of Instruments and Measure various parameters.
		Explain Principle of operations for various Sensors and Transducers.
		Describe functional blocks of data acquisition system and Telemetry.
		Determine transfer functions for given systems.
		Evaluate time domain parameter for given system and Predict its Stability using appropriate Criteria.
		Evaluate frequency domain parameter for givensystem and Predict its Stability using appropriate Criteria.
6	ELECTRONIC DEVICES AND CIRCUIT-I LAB (ECL301)	Discuss different type of measuring instrument.
		Construct and simulate characteristic of PN junction diode and its application.
		Find stability of CE-BJT amplifier.
		Analyze and design characteristic of CE-BJT amplifier
		Analyze and design characteristic of FET amplifier
		Analyze and design frequency response of FET amplifier
7	DIGITAL SYSTEM AND DESIGN LAB (ECL302)	Illustrate Truth Table and implement different basic Gates.
		Solve the given Boolean function using logic gates in both SOP and POS.
		Create sequential logic circuits
		Create combinational logic circuits
		Design & analyze 4-bit Binary to gray code converter/ 4-bit Gray to Binary code converter.
8	OOP USING JAVA LAB (ECL303)	Explain the fundamental concepts of Object Oriented Programming
		Explain the Fundamental of Java Programming
		Apply Methods, Constructors, Destructors and Arrays
		Analyze Inheritance, Interface and Package
		Compose program using Multithreading and applet

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE   **SEM: IV**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	APPLIED MATHMATICS -IV (ECC401)	Demonstrate the Basic knowledge of calculus of variation
		Demonstrate the knowledge of vector spaces, subspaces, orthogonal spaces & Gramschmidt process.
		Apply the Knowledge of Eigen values & Eigen vectors to various problems in the field of Image Processing.
		Demonstrate an ability to identify & solve problems on Probability Distribution.
		Solve problems on correlation & find equations of lines of Regression.
		Apply the concept of line Integral & Residue Theorm to evaluate Integrals of different types.
2	ELECTRONIC DEVICES AND CIRCUITS-II (ECC402)	Explain the Construction, operation and characteristics of MOSFET and MOSFET biasing.
		Analyze the multistage amplifiers with different coupling methods.
		Design the Multistage amplifiers (CE-CE, CS-CS, CS-CE).
		Classify the power amplifiers and Design the power amplifiers.
		Analyze the different feedback topologies.
		Explain and Design the different oscillator circuits.
3	LINEAR INTEGRATED CIRCUITS (ECC-403)	Explain the various current mirror circuits and analyze differential amplifier with active load
		Discuss the linear application of operational amplifier
		Discuss the non-linear application of operational amplifier
		Explain analog to digital and digital to analog converter
		Discuss fucntion and applications of special function Ics.
		Discuss fucntion and applications of voltage regulators.
4	SIGNALS AND SYSTEMS (ECC404)	Discuss about various types of signals and systems, classify them, analyze them, and perform various operations on them,
		Explain use of transforms in analysis of signals and system in continuous and discrete time domain.
		Examine the effect of various properties and operations of signals and systems.
		Evaluate the time and frequency response of Continuous and Discrete time systems which are useful to understand the behaviour of electronic circuits and communication systems.
		Apply the knowledge of state variable in time domain.
		Apply the knowledge of signal and system.
5	PRINCIPLES OF COMMUNICATION ENGINEERING (ECC405)	Outline the basics of communication system.
		Apply different modulation and demodulation techniques used in analog communication
		Identify and solve basic communication problems
		Analyze different types of transmitter and receiver circuits
		Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems
		Explain the concept of multiplexing technique.
6	ELECTRONIC DEVICES AND CIRCUITS-II LAB (ECL401)	Analyze and design different amplifier to observe their frequency response.
		Determine and verify frequency of oscillation of different oscillators.
		Construct and explain different power amplifier with their efficiency.
		Design, implement, and demonstrate basic electronic analog circuit.
7	LINEAR INTEGRATED CIRCUITS LAB (ECL-402)	Demonstrate and calculate linear and non linear application of OP-AMP
		Demonstrate basic Amplifier Circuit using OP-AMP
		Make Use of P-spice model for designing different linear circuit.
8	PRINCIPLES OF COMMUNICATION ENGINEERING LAB (ECL403)	Demonstrate different type of Modulation and Demodulation
		Demonstrate different type of Pulse Modulation and Demodulation
		Demonstrate different type Multiplexing techniques
		Make use of MATLAB to illustrate different types of Modulation.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE   **SEM: V**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	MICROCONTROLLERS &APPLICATIONS (ETC501)	Draw and describe architecture of 8051 and ARM7 microcontroller.
		Interface various peripheral devices to microcontrollers.
		Write assembly language program for microcontrollers.
		Design microcontroller based system for various applications.
		Apply the concept of embedded systems.
		Compose Assembly language and Embedded C program for microcontrollers
2	ANALOG COMMUNICATION (ETC502)	Outline of basic communication system.
		Develop knowledge about AM modulation & Demodulation.
		Explain the concept of FM & PM Modulation & Demodulation.
		Describe AM and FM Receivers Circuit.
		Acquired knowledge about Sampling Technique.
		Discuss about Pulse Modulation & demodulation.
3	RANDOM SIGNAL ANALYSIS (ETC503)	Apply theory of probability in identifying and solving relevant problems.
		Explain and differentiate random variables and vector through the use of cumulative distribution function (CDF), probability density function (PDF), probability mass function (PMF) as well as joint, marginal and conditional CDF, PDF and PMF.
		Show probability and expectation computations using important discrete and continuous random variable types.
		Define and specify random processes and determine whether a given process is stationary or wide sense stationary.
		Analyze the response of a linear time invariant system to such a random process.
		Describe basic concepts related to Markov chains and queuing theory and relate it to seal world applications.
4	RF MODELLING AND ANTENNA (ETC504)	Analyze Active and Passive Components in RF range, Transmission lines
		Analyze and design RF Filters
		Analyze the radiation mechanisms of antennas
		Demonstrate knowledge of antennas in communication systems. Ability to discriminate between antennas on the basis of their electrical performance
		Discriminate various antennas on the basis of their electrical performance.
		Analyze Special types of Antennas.
4	INTEGRATED CIRCUIT (ETC505)	Explain the fundamentals and areas of applications for the Integrated Circuits.
		Analyze important types of integrated circuits of day-to-day requirements.
		Demonstrate the ability to design practical circuits that perform the desired operations.
		Explain the differences among theoretical, practical & simulated results in integrated circuits.
		Identify the differences among theoretical, practical & simulated results in integrated circuits.
		Choose the appropriate integrated circuit modules to build a given application.
5	BUSINESS COMMUNICATION AND ETHICS LAB (ETS506)	Discuss buisness and professional writing skill
		Interpret technical proposal at buisness level.
		Apply interpersonal skill like leadership, team building and management proficiency.
		Illustrate ethical code of conduct in buisness and corparate activities.
		Illustrate employment skill like presentaiton skill, interview technique and group discussion.
6	MICROCONTROLLER &APPLICATIONS LAB (ECL501)	Make use of SPJ Simulator to perform different tasks on 8051 microcontroller.
		Make use of MPLAB & Proteus for Microcontroller 8051 Interfacing
7	COMMUNICATION ENGINEERING LAB-I (ECL502)	Demonstrate different type of continuous modulation .
		Demonstrate different type of Pulse modulation
		Demonstrate different type of Multiplexing Techniques
		Demonstrate digital modulation technique
		Describe radio receiver
8	COMMUNICATION ENGINEERING LAB-II (ECL503)	Analyze RF impedance response of different passive component
		Demonstrate different application of OP-AMP
		Apply different function of IC555
		Use of P-spice for different integrated ckt
		Illustrate different type of antennas

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE   **SEM: VI**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	DIGITAL COMMUNICATION (ETC601)	Explain the basics of information theory and coding techniques.
		Determine the minimum number of bits per symbol required to represent the source and the maximum rate at which a reliable communication can take place over the channel.
		Describe and determine the performance of different waveform techniques for the generation of digital representation of signals.
		Determine methods to mitigate inter symbol interference in baseband transmission system.
		Distinguish the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel.
		Outline various spreading techniques and determine bit error performance of various digital communication systems.
2	DiSCRETE TIME SIGNAL PROCESSING (ETC602)	Outline z-transforms and discrete time Fourier transforms to analyze a digital system
		Explain Properties and algorithms for implementation of DFT
		Illustrate the design of FIR and IIR filters
		Demonstrate multirate signal processing and its application
		Discuss finite word length effects
		Application of digital signal processing
3	COMPUTER COMMUNICATION AND TELECOM NETWORK (ETC603)	Outline of basic Network Architectures, Protocol layers, and Service Models
		Develop knowledge about Network Applications
		Explain the concept of Reliable and Unreliable Transport-layer protocols
		Perform basic configurations on routers and Ethernet switches
		Acquired knowledge about Data link layer Services and Protocols
		Design a small or medium sized computer network including media types, end devices, and
4	TELEVISION ENGINEERING (ETC604)	Explain types of picture tubes ,scanning & Transmission & Reception of signals
		Classify Colour Television system characteristics and different types of encoding systems
		Explain Basics of digital video formats and there comparison
		Explain types Digital Video Broadcasting
		Explain Advanced Digital Smart TV ,IP TV and its applications
		Discuss LCD LED and Chromcast TV
4	OPERATING SYSTEM (ETC605)	Explain the role of Operating System in terms of process, memory, file and I/O management.
		Compare the various algorithms and comment about performance of various algorithms used for CPU scheduling
		Apply various concept related with Deadlock to solve problems related with
		Resources allocation, after checking system in Safe state or not.
		Compare the various algorithms and comment about performance of various algorithms used for management of memory
		Compare the various algorithms and comment about performance of various algorithms used for File handling
5	VLSI DESIGN (ETC606)	Demonstrate a clear understanding of CMOS fabrication flow and technology scaling.
		Design MOSFET based logic circuit
		Draw layout of a given logic circuit
		Recognize logic circuits with different design styles
		Demonstrate an understanding of working principle of operation of different types of memories
		Demonstrate an understanding of working principles of clocking, power reduction and distribution
6	DISCRETE TIME PROCESSING LAB (ETL601)	Make use of SPJ Simulator to perform different tasks on 8051 microcontroller.
		Make use of MPLAB & Proteus for Microcontroller 8051 Interfacing
7	COMMUNICATION ENGINEERING LAB-III (ECL602)	Demonstrate and calculate different modulation shift keying technique.
		Illustrate different shift Keying technique by using MATLAB
		Use Of CISCO packet Tracer for configuration of routing protocol
		Design TELNET using Packet Tracer
8	COMMUNICATION ENGINEERING LAB-IV (ECL603)	Test different section of monochrome and colour TV.
		Use Discrete schematic and microwind PC Tools.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE **SEM: VII** **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	IMAGE AND VIDEO PROCESSING (ETC701)	Study the fundamentals of digital image processing and its color image models.
		Analyze the need for image transforms, types and their properties.
		Study different techniques employed for the enhancement of images both in spatial and frequency domain.
		Recognize need of image segmentation for feature extraction.
		Explore image restoration techniques and methods.
		Outline the basics of video processing.
		Demonstrate quantitative models for engineering applications in video processing.
2	MOBILE COMMUNICATION (ETC702)	Define the infrastructure for development in mobile communication systems
		Describe different standards & aspects of 2G Technologies
		List different standards & aspects of 3G Technologies.
		Demonstrate Structure of Long Term Evolution Technique.
		Discover emerging technologies required for 4G,SDR, & MIMO
		State different fundamentals of propagation models
3	OPTICAL COMMUNICATION (ETC703)	Explain fundamentals characteristics of optical fiber communication.
		Explain transmission characteristic of optical fiber.
		List and explain principles and characteristics of various sources of optical fiber.
		List and explain principles and characteristics of various detectors of optical fiber.
		List and explain principles and characteristics of various optical fiber components.
		Calculate parameters for optical link budgeting and analyze the link.
4	MICROWAVE AND RADAR ENGINEERING (ETC704)	Differentiate and identify waveguides and microwave components
		Explain generalize impedance matching and tunning network.
		Explain generation and amplification of microwaves
		Identify semiconductor devices
		Demonstrate RADAR for industrial and scientific purpose
		Explain microwave applications
5	DATA COMPRESSION AND ENCRYPTION (ETE701)	Explain Text compression and illustrate compression techniques.
		Describe Audio compression.
		Discuss image and video compression.
		Explain and illustrate types of cipher.
		Describe symmetric and asymmetric key cryptography schemes.
		Discuss network security and ethical hacking.
6	IMAGE AND VIDEO PROCESSING LAB (ETL701)	Analyze and explain digital image processing
		Use of MATLAB to perform different techniques of image processing.
		Demonstrate image processing using DSP hardware
7	ADVANCED COMMUNICATION ENGINEERING LAB-I (ECL702)	Use of AT commands of MHT software to perform different task on MHT hardware
		Use of NS2 software to simulate different communication network
8	ADVANCED COMMUNICATION ENGINEERING LAB-II (ECL703)	Measures Frequencies of different devices using RADAR
		Demonstrate different microwave components using test bench
		Design and apply analog and digital link using optical fiber
9	DATA COMPRESSION AND ENCRYPTION LAB (ETE701)	Illustrate different data compression technique using MATLAB software.
		Describe different audio compression technique.
		Describe different image compression.
		Illustrate image compression using DCT using MATLAB.
		Illustrate different data encryption technique using MATLAB.

VIGHNAHARATA TRUST'S
SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE **SEM: VIII** **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO	SUBJECT	COURSE OUTCOMES
1	WIRELESS NETWORK (ETC801)	Explain GSM , UMTS , HSPA and LTE
		Describe Link budgets for GSM, CDMA, CDMA2000, HSDPA systems ,RF planning
		List different standards & aspects of Emerging Wireless Technologies.
		Describe Wireless Sensor Network, Applications of wireless sensor network ,Medium access control protocols, routing protocols, transport control protocols
		Explain Middleware for Sensor Networks & Network Management
2	SATELLITE COMMUNICATION AND NETWORK (ETC802)	Explain the basics of satellite communication
		Analyze and design satellites as per various conditions of space
		Explain and analyzes link budget of satellite signal for proper communication
		Use the system for the benefit of society
		Analyze various coding techniques for the transformation of signals.
		Use the different application of satellite communication
3	INTERNET & VOICE COMMUNICATION (ETC803)	Explain the concept of encapsulation and its relationship to layering in the network models.
		Describe the operation of the components of a router including, DHCP, Routing function, Switching function and DNS in the global internet.
		Explain how TCP's byte-stream sliding window is related to a traditional packet-based sliding window algorithm.
		Implement local area networks using both static and dynamic addressing techniques including sub netting.
		Explain Audio and Video digitization and its compression techniques.
		Explain and analyze the issues in providing quality-of-service for networked multimedia applications, such as internet telephony.
4	TELECOM NETWORK MANAGEMENT (ETE802)	Outline the overview of Network management with all Perspectives.
		Explain OSI network management standards & models
		Explain about the SNMP models with proxy server and RMON
		Illustrate the concepts of Broadband Network Management & ATM Technology.
		Apply the Network Management application to different models in the system.
		Define Telecommunication Management Networks with conceptual model, standard and architecture.
5	WIRELESS NETWORKS LAB (ETL801)	Use NS-2 software to simulate wireless networks.
		Analyze and design wireless network.
		Design and analyze link budget of GSM and CDMA.
7	SATELLITE COMMUNICATION & NETWORKS (ETL802)	Analyze and measure different signal of satellite communication.
		Analyze and Measure different parameter of satellite link budget.
		Use of STK and Celestia software for domestic and space satellite system.
8	INTERNET & VOICE COMMUNICATION (ETL803)	Use of CISCO packet tracer to design different protocol of application layer.
		Analyze different function of TCP-IP layer.
		Use of Ubuntu Linux for multimedia handling.
9	TELECOM NETWORK MANAGEMENT LAB (ETL802)	Use of CISCO packet tracer for analyzing different network topologies and OSI model.
		Design of different protocols and network using CISCO packet tracer.
		Use of wireshark for analyzing different protocol

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE   **SEM: III**   **SCHEME:CBCS**

COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics -III (CSC301)	Apply Laplace Transforms to solve Engineering problems.
		Apply Inverse Laplace Transforms to solve Engineering problems.
		Demonstrate the Fourier series & apply it in Engineering problems.
		Analyze & solve complex Engineering Problems.
		Apply Z-transform and inverse Z-transform to change the input singnals in Engineering problems.
		Apply the concept of Correlation and Regression to the engineering problems.
2	Digital Logic Design and Analysis (CSC302)	Explain different number systems and their conversions.
		Analyze and minimize Boolean expressions.
		Design and analyze combinational circuits.
		Design and analyze sequential circuits.
		Describe the basic concepts of VHDL.
		Explain basics of TTL and CMOS Logic families.
3	Discrete Mathematics (CSC303)	Find the notion of mathematical thinking, mathematical proofs and apply them in problem solving.
		Examine relations, Diagraph and lattice.
		List functions, graphs and their use in programming applications.
		Explain groups and codes in Encoding-Decoding.
		Explain groups able to express a logic sentence in terms of predicates.
		Apply discrete structures in other computing problems such as formal specification, verification, artificial intelligence, crypgraphy, Data Analysis and Data Mining etc.
4	Electronic Circuits and Communication Fundamentals (CSC304)	Analyze the use of semiconductor devices in circuits.
		Analyze importance of oscillars and power amplifiers in communication system.
		Explain basic concepts of operational amplifier and their applications.
		Analyze the fundamental concepts of electronic communication.
		Analyze electronic devices and circuitsused in communication applications.
		Identify basic concepts of information theory.
5	Data Structure (CSC305)	Demonstrate difference between data structures.
		Define linear and non-linear data structures like stacks, linked list etc.
		Construct the programs using link list, choose appropriate data structure as applied specified problem definition.
		Develop a code using linked list and form the tree data structure
		Apply operations like traversing mechanism etc. on Various data structures.
		Apply operations like searching, sorting, insertion, deletion, traversing.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE   **SEM: IV**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics-IV (CSC401)	Apply the method of solving complex integration, computing residues & evaluate various contour integrals.
		Demonstrate the matrices and compute Eigen values and Eigen vectors.
		Apply the concept of probability distribution to the engineering problems.
		Apply the concept of large sampling theory to the engineering problems.
		Apply the concept of small sampling theory to the engineering problems.
		Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems.
2	Analysis of Algorithms (CSC402)	Analyze the running time and space complexity of algorithms.
		Analyze the complexity of divide and conquer strategy.
		Analyze the complexity of greedy strategy.
		Demonstrate the complexity of dynamic programming strategy.
		Demonstrate backtracking, branch, bound ,string matching techniques.
		Analyze P,NP, and NP-Complete certain problem is NP-Complete.
3	Computer Organization and Architecture (CSC403)	Explain basic structure of the Compiler system.
		Analyze the arithmetic algorithms for solving ALU operations
		Explain instruction level parallelism and hazards in typical processor pipelines.
		Explain superscalar architectures, multi-core architecture and their advantages.
		Demonstrate the memory mapping techniques.
		Identify various types of interrupts and I/O operations in a Compiler system.
4	Computer Graphics (CSC404)	Demonstrate and Analyze the basic concepts of Computer Graphics.
		Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis.
		Determine the three Dimensional Object Representations.
		Apply geometric transformations, viewing and clipping on graphical objects.
		Explore solid model representation techniques and projections.
		Analyze visible surface detection techniques.
5	Operating System (CSC405)	Analyze role of Operating System in terms of process, memory, file and I/O management.
		Analyze the concept of a process, thread, mutual exclusion and deadlock.
		Evaluate performance of process scheduling algorithms and IPC.
		Analyze the concepts of memory management techniques.
		Evaluate the performance of memory allocation and replacement techniques.
		Analyze the different techniques of file and I/O management.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE **SEM: IV** **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
6	Analysis of Algorithms Lab (CSL401)	Analyze the complexities of various problems in different domains.
		Analyze running time of basic algorithms for classic problems in various domains.
		Develop the efficient algorithms for new problems with suitable designing techniques.
		Improve the algorithms using different strategies.
7	Computer Graphics Lab (CSL402)	Explore the working principle, utility of various input/ output devices.
		Improve various output and filled area primitive algorithms using C.
		Apply transformation and clipping algorithms on graphical objects.
		Construct the curve and fractal generation.
		Develop a Graphical application based on learned concept.
8	Processor Architecture Lab (CSL403)	Analyze to Assemble personal Compiler.
		Design basic building blocks of a Compiler.
		Improve various algorithms like Booth''s algorithm for arithmetic operations.
		Explain various I/O Builds with merits and demerits
9	Operating System Lab (CSL404)	Analyze basic operating system commands.
		Analyze and explore various system calls.
		Compile shell scripts and shell commands using kernel APIs.
		Improve and analyze different process scheduling algorithms
		Improve and analyze different memory management algorithms.
		Evaluate process management techniques and deadlock handling using simulator.
10	Open Source Technology Lab (CSL405)	Analyze basic concepts in python and perl.
		Explore contents of files, directries and text processing with python.
		Develop program for data structure using built in functions in python.
		Explore django web framework for developing python based web application.
		Analyze file handling and database handling using perl.
		Explore basics of two way communication between client and server using python and perl.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE   **SEM:V**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Microprocessor (CSC501)	Analyze microprocessors and Intel 8086/8088 Architecture.
		Demonstrate the programs to run on 8086 microprocessor systems.
		Design system using memory chips and peripheral chips for 16 bit 8086microprocessor
		Analyze techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
		Distinguish between RISC and CISC processors.
		Analyze multi core processor and its advantages.
2	Database Management System (CSC502)	Analyze the fundamentals of a database systems.
		Design and draw ER and EER diagram for the real life problem.
		Analyze the conceptual model relational model and formulate relational algebra queries.
		Design and querying database using SQL.
		Analyze and apply concepts of normalization relational database design.
		Analyze concept of transaction, concurrency and recovery.
3	Computer Network (CSC503)	Analyze concepts and fundamentals of data communication and computer networks.
		Explore the inter-working of various layers of OSI.
		Analyze the issues and challenges of procols design while developing in TCP/IP procol suite.
		Demonstrate the strengths and weaknesses of various routing algorithms.
		Analyze transport layer and various application layer procols.
		Demonstrate Network Layer with switching and routing technologies.
4	Theory of Computer Science (CSC504)	Identify the central concepts in theory of computation and Simplify between deterministic and nondeterministic automata, also obtain equivalence of NFA and DFA.
		Design the equivalence of languages Explained by finite automata and regular expressions.
		Demonstrate regular, context free grammars while recognizing the strings and tokens.
		Design pushdown automata recognize the language.
		Develop an Analyzing of computation through Turing Machine.
		Analyze fundamental Analyzing of decidability and undecidability.
5	Advanced Operating Systems (CSDLO5012)	Demonstrate Analyzing of design issues of Advanced operating systems.
		Classify different types of operating systems.
		Analyze the design aspects and data structures for file subsystem, memory subsystem.
		Demonstrate process subsystem of Unix OS.
		Demonstrate different architectures of Multiprocessor OS.
		Design data structures in Multiprocessor operating systems.
6	Microprocessor Lab (CSL501)	Build appropriate instructions program in microprocessor to perform various tasks.
		Develop the program in assembly language for Intel 8086 processor.
		Demonstrate the execution and debugging of assembly language program.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++

DEPARTMENT OF COMPUTER ENGINEERING

ACADEMIC YEAR 2017-18

YEAR: TE   **SEM:V**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
7	Computer Network Lab (CSL502)	Design and setup networking environment in Linux.
		Build Network OS mulars such as NS2, Wireshark
		Improve programs using core programming APIs for Analyzeing networking concepts.
8	Database & Information System Lab (CSL503)	Design and draw ER and EER diagram for the real life problem with software ol.
		Create and update database and tables with different DDL and DML statements.
		Apply integrity constraints and able to provide security data.
		Improve and execute Complex queries.
		Apply triggers and procedures for specific modules.
		Utilize concurrent transactions and able to access data through front end (using JDBC ODBC Connectivity).
9	Web Design Lab (CSL504)	Analyze the core concepts and features of Web Technology.
		Design static web pages using HTML5 and CSS3.
		Apply the concept of client side validation and design dynamic web pages using JavaScript.
		Evaluate client and server side technologies and create Interactive web pages using PHP , AJAX with database connectivity using MySQL.
		Analyze the basics of XML, DTD and XSL and develop web pages using XML / XSLT.
		Analyze end Buildr requirements and Create web application using appropriate web technologies and web development framework.
10	Business Communication & Ethics (CSL505)	Design a technical document using precise language, suitable vocabulary and apt style.
		Develop the life skills/interpersonal skills progress professionally by building stronger.
		Demonstrate awareness of contemporary issues knowledge of professional and ethical.
		Apply the traits of a suitable candidate for a job/higher education.
		Apply techniques of holding a group discussion, facing interviews and writing resume/SOP.
		Select formal presentations effectively Improveing the verbal and non-verbal skills

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++

DEPARTMENT OF COMPUTER ENGINEERING

ACADEMIC YEAR 2017-18

YEAR: TE   **SEM: VI**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Software Engineering (CSC601)	Analyze and demonstrate basic knowledge in software engineering.
		Identify requirements, analyze and prepare models.
		Plan, schedule and track the progress of the projects.
		Design & develop the software projects.
		Identify risks, manage the change assure quality in software projects.
		Apply testing principles on software project and Analyze the maintenance concepts.
2	System Programming and Compiler Construction (CSC602)	Identify the relevance of different system programs.
		Explain the various data structures and passes of assembler design.
		Identify the need for different features and designing of macros.
		Classify different loaders and linkers and their contribution in developing efficient Buildr application
		Construct different parsers for given context free grammars.
		Identify the need synthesis phase produce object code optimized in terms of high execution speed and less memory usage
3	Data Warehousing & Mining (CSC603)	Analyze Data WarehoBuild fundamentals, Data Mining Principles
		Design data warehoBuild with dimensional modelling and apply OLAP operations.
		Identify appropriate data mining algorithms solve real world problems
		Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining
		Explain complex data types with respect spatial and web mining.
		Demonstrate Buildr experiences wards research and innovation.
4	Cryptography and System Security (CSC604)	Analyze system security goals and concepts, classical encryption techniques.
		Analyze encryption and decryption techniques verifying the integrity of varying message sizes.
		Apply the knowledge of crypgraphic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
		Apply different digital signature algorithms achieve authentication and design secure applications.
		Explore and analyze sniffers, port scanners and other related ols for analysing packets in a network.
		Analyze confidentiality ,authentication and design secure applications.
5	Advanced Computer Network (CSDLO6024)	Demonstrate the Analyzeing of advance data communication technologies.
		Demonstrate the Analyzeing of WAN Technology typically ATM .
		Demonstrate the Analyzeing of packet switching procols such as X.25, X.75.
		Explore the issues of advance internet routing procols and also QoS based procols.
		Analyze issues of traffic requirements and perform capacity planning.
		Demonstrate the Analyzeing of procol Buildd for management of network
6	Software Engineering Lab (CSL601)	Identify requirements and apply process model selected case study.
		Analyze and design models for the selected case study using UML modeling.
		Analyze the use of various software engineering ols

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE   **SEM: VI**   **SCHEME:CBGS**
COURSE OUTCOMES

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SR.NO.	SUBJECT	COURSE OUTCOMES
7	System Software Lab (CSL602)	Apply machine code by using various databases generated in pass one of two pass assembler.
		Construct different databases of single pass macro processor.
		Identify and validate different tokens for given high level language code.
		Apply input string by constructing p down /Botm up parser.
		Improve synthesis phase of compiler with code optimization techniques.
		Apply various ols like LEX and YACC.
8	Data warehousing & Mining (CSC603)	Design data warehoBuild and perform various OLAP operations.
		Improve classification, prediction, clustering and association rule mining algorithms.
		Demonstrate classifications, prediction, clustering and association rule mining algorithms on a given set of data sample using data mining ols.
		Demonstrate spatial and web mining algorithms.
9	System Security Lab (CSL604)	Apply the knowledge of symmetric crypgraphy Improve simple ciphers.
		Apply analyze and Improve public key algorithms like RSA and El Gamal.
		Analyze and evaluate performance of hashing algorithms.
		Explore the different network reconnaissance ols gather information about networks.
		Demonstrate firewalls and intrusion detection systems using open source technologies and explore email security.
		Explore various attacks like buffer-overflow, and web-application attacks.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE   **SEM: VII**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Digital Signal Processing (CPC701)	Analyze the concept of DT Signal and perform signal manipulation.
		Analyze the DT Systems and find analysis of system in time domain.
		Analyze Fourier Transform System in frequency domain.
		Explain FFT algorithm and design the same.
		Develop different DSP Algorithms.
		Analyze and Simplify Digital Signal Processor and Microprocessor working.
2	Cryptography And System Security (CPC702)	Analyze Compiler security, the principles and techniques of cryptography.
		Analyze Data Encryption Standard(DES), Learned principles of Public Key Crypgraphy.
		Analyze Hash Functions, secure hash algorithm.
		Demonstrate the Authentication Applications.
		Explain the Program , Operating System, Database Security and working of IDS and Firewalls.
		Analyze IP Security.
3	Artificial Intelligence (CPC703)	Develop a basic Analyzing of AI.
		Develop a basic Analyzing of AI building blocks presented in intelligent agents.
		Select the appropriate problem solving method and knowledge representation technique.
		Explain strength and weaknesses of AI approaches knowledge– intensive problem solving.
		Design models for reasoning with uncertainty as well as the Build of unreliable information.
		Design and develop the AI applications in real world scenario.
4	Image Processing (ELEC - II) (CPE7023)	Analyze image formation and the role human visual system plays in perception of gray and color image data.
		Solve the image processing algorithms and techniques in image enhancement.
		Analyze different operations and algorithm in image segmentation and image representations.
		Develop fast image transform flow graph.
		Analyze different image compression techniques to reduce data transmission cost.
		Construct Binary Image Processing Operations and extract important features from an image.
5	Network Threats and Attacks Laboratory (CPL701)	Analyze and Use various network reconnaissance tools.
		Analyze the use of Nessus tool to scan network for vulnerabilities.
		Construct the code to simulate buffer overflow attack.
		Demonstrate the Set up IPSEC under LINUX.
		Analyze and Install IDS study logs.
		Demonstrate the NMAP installation and scan different ports.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF COMPUTER ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE   **SEM: VIII**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Data Warehousing & mining (CPC801)	Demonstate Data Warehousing ,Role of Metadata,Data Warehousing Design Strategies, Design Model.
		Apply various concept related with Data Cleaning like Extraction ,loading and Transform.
		Compare the various Data Mining Technique, Statistical Description of Data & Data Visualization.
		Explain and analyze the pre-processing Normalization, Binning, Hisgram.
		Explain and analyze the pre-processing Normalization, Binning, Hisgram.
		Demonstrate the Mining Frequent Pattern and Association Rule.
2	Human Machine Interaction (CPC802)	Analyze the psychology of humans for interaction with machines.
		Analyze and design for different experience of levels of Builders.
		Analyze make design of graphics for making GUI and Web UI.
		Analyze make good design for GUI and Web UI considering designing guidelines.
		Design good design using interaction styles.
		Analyze and design good communication style using Text messages.
3	Parallel and Distributed Computing (CPC803)	Demonstrate Parallel Programming Models, Parallel Algorithms and Pipeline Processing.
		Analyze SIMD parallel Processors.
		Classify distributed systems, Distributed System Model.
		Analyze and Improve the RPC.
		Improve different types of scheduling and synchronization algorithm and compare them.
		Analyze hadoop system.
4	Digital Forensics (ELEC-III) (CPE8034)	Analyze the concept of Cybercrime.
		Analyze digital forensics data duplication ols requirement.
		Analyze Preserving and recovering of digital evidences.
		Analyze different attacks on a network.
		Analyze Data analysis Techniques.
		Classify laws concerned with digital forensics and cybercrime.
5	Cloud Computing Laboratory (CPL801)	Analyze and running virtual machines on open source OS.
		Analyze the concept of SaaS and implement using own Cloud.
		Analyze identity management in cloud and simulate it by using OpenStack.
		Analyze how to secure web server and own cloud.
		Analyze how to create and manage various users accounts.
		Analyze Microsoft Azure with types.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE　　　　　　　**SEM: III**　　　　　　　**SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics III (MEC301)	Demonstrate the ability of using Laplace Transform in solving the Ordinary Differential Equations and Partial Differential Equations
		Demonstrate the ability of using Fourier Series in solving the Ordinary Differential Equations and Partial Differential Equations
		Solve initial and boundary value problems involving ordinary differential equations
		Identify the analytic function, harmonic function, orthogonal trajectories
		Apply bilinear transformations and conformal mappings
		Identify the applicability of theorems and evaluate the contour integrals
2	Thermodynamics (MEC302)	Demonstrate application of the laws of thermodynamics to wide range of systems.
		Write steady flow energy equation for various flow and non-flow thermodynamic systems. Compute heat and work interactions in thermodynamics systems
		Compute efficiency of heat engine & COP of Heat Pump & Refrigerator. Compute change in Entropy in thermodynamics systems
		Demonstrate the interrelations between thermodynamic functions to solve practical problems. Use of steam table to compute thermodynamics interactions.
		Compute efficiency of Reciprocating Compressors, Differentiate between Rotary & Reciprocating Compressor.
		Use of mollier chart to compute thermodynamics interactions. Compute efficiencies of Gas & Vapour power cycles.
3	Strength of Materials (MEC303)	Study about various types of loading and stresses induced on section.
		Compute the SFD and BMD for different types of loads and support conditions.
		Compute and analyse of direct, bending, shear stresses induced on Beam.
		Study the concept of twisting momentand its effect on bars of circular cross-sections. Compute & analyze of strain energy stored in the member due to different types of loading, Shear, Bending and Torsion.
		Study about the deflection of beams playsan important role in the engineering structures & Analyse Hoop stress and axial stress in a thin shell subjected to internal pressure.
		Analyse buckling and bending phenomenon in columns and beams respectively.
4	Production Process I (MEC304)	Demonstrate understanding of casting process
		Illustrate principles of forming processes
		Demonstrate applications of various types of welding processes.
		Differentiate chip forming processes such as turning, milling, drilling, etc.
		Illustrate the concept of producing polymer components and ceramic components.
		Distinguish between the conventional and modern machine tools.
5	Material Technology (MEC305)	Identify various crystal imperfections, deformation mechanisms, and strengthening mechanisms
		Demonstrate understanding of various failure mechanisms of materials.
		Interpret Iron-Iron carbide phase diagram, and different phases in microstructures of materials at different conditions
		Select appropriate heat treatment process for specific applications
		Identify effect of alloying elements on properties of steels
		Illustrate basics of composite materials, Nano- materials and smart materials

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE **SEM: IV** **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics IV (MEC401)	Solve the system of linear equations using matrix algebra with its specific rules
		Demonstrate basics of vector calculus
		Apply the concept of probability distribution and sampling theory to engineering problems
		Apply principles of vector calculus to the analysis of engineering problems
		Identify, formulate and solve engineering problems.
		Illustrate basic theory of correlations and regression
2	Fluid Mechanics (MEC402)	Define properties of fluids and classification of fluids. Compute Forces on surfaces due to hydrostatic pressure
		Define equations for stream function, velocity potential function in rectangular and cylindrical co-ordinates. Compute stream function, velocity potential function in rectangular and cylindrical co-ordinates
		Formulate and solve equations of the control volume for fluid flow systems
		Compute resistance to flow of incompressible fluids through closed conduits and over surfaces
		Explain concept of boundary layer. Analyze laminar and turbulent boundary layers, drag, and boundary layer separation.
		Apply fundamentals of compressible fluid flows to relevant systems
3	Production Process II(MEC404)	Demonstrate understanding of metal cutting principles and mechanism
		Identify cutting tool geometry of single point and multipoint cutting tool
		Demonstrate various concepts of sheet metal forming operations
		Demonstrate concepts and use of jigs and fixtures
		Illustrate various non-traditional machining techniques
		Illustrate concepts and applications of additive manufacturing
4	Kinematics of Machinery (MEC405)	Define various components of mechanisms.
		Construct/Compose mechanisms to provide specific motion.
		Draw velocity and acceleration diagrams of various mechanisms.
		Construct CAM profile for the specific follower motion.
		Select appropriate power transmission mechanism
		Select appropriate power transmission mechanism
5	Industrial Electronics (MEC403)	Demonstrate characteristics of various electrical and electronics components
		Develop simple applications built around these components
		Identify use of different basic gates
		Identify and use digital circuits for industrial applications
		Built and demonstrate basic parameter measurement using microcontroller
		Test and Analyse speed-torque characteristics of electrical machines for speed control.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR:TE   **SEM: V**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Theory of Machines-II (MEC504)	Apply the working principles of clutches and its constructional details
		Analyze working of brakes and dynamometers
		Demonstrate working mechanism of different types of governors.
		Analyze gyroscopic effect on various applications
		Analyze and select gear trains.
		Analysis of Static and Dynamic force in slider crank mechanism
2	Mechanical Measurements and Control (MEC502)	Classify various types of static characteristics and types of errors occurring in the system.
		Classify and select proper measuring instrument for linear and angular displacement
		Classify and select proper measuring instrument for pressure and temperature measurement
		Design mathematical model of system/process for standard input responses
		Analyse error and differentiate various types of control systems and time domain specifications
		Analyse the problems associated with stability
3	I C Engines (MEC501)	Differentiate SI and CI engines, Explain deviation of actual engine cycle from ideal cycle
		Explain Carburetors and fuel injection system in S I Engines along with Ignition systems & Combustion phenomenon in SI engines
		Identify and explain working of Ignition System & Combustion phenomenon.
		Identify and explain working of engine lubrication, cooling systems.
		Plot and analyze engine performance characteristic. Perform exhaust gas analysis and comment on adverse implications on environment.
		Explain Modern Trends in I C Engines
4	Production Process-III (MEC503)	To Study of high speed machines
		Demonstrate understanding of Sheet metal forming operations
		Analysis and design of jigs & fixtures.
		Study of non- traditional machining and application areas.
		To Study Plastic Injection Moulding
		Study of advanced concepts like rapid prototyping & agile mfg.
5	Heat Transfer (MEC505)	Identify the three modes of heat transfer (conduction, convection and radiation)
		Illustrate basic modes of heat transfer
		Develop mathematical equation for conduction and convection mode of heat transfer like in case of fins
		Develop mathematical model for transient heat transfer
		Demonstrate and explain mechanism of boiling and condensation
		Analyse different heat exchangers and quantify their performance

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR:TE **SEM: VI** **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Metrology and Quality Engineering (MEC601)	Demonstrate inspection methods and different gauges
		Illustrate working principle of measuring instruments and calibration methodology
		Illustrate basic concepts and statistical methods in quality control
		Demonstrate characteristics of screw threads, gear profile, and tool profile
		Illustrate the different sampling techniques in quality control
		Illustrate different nondestructive techniques used for quality evaluation
2	Mechanical Vibrations (MEC603)	To develop mathematical model for free undamped single degree of freedom vibration system
		To develop mathematical model for free damped single degree of freedom vibration system
		Estimate natural frequency of free undamped multi degree of freedom vibration system
		Analyze vibratory response of forced single degree of freedom vibratory system
		Estimate the parameters of vibration isolation system
		Estimate the parameters of Static and dynamic balancing for multi rotor system
3	Machine Design I (MEC602)	Introduction to Machine design
		Curved Beams ,Thick cylinders
		Design against static Loads
		Design against Fluctuating Loads
		Design of shaft, Key, coupling
		Design of Springs
4	Thermal and Fluid Power Engineering (MEC604)	Differentiate boilers, boiler mountings and accessories & Evaluate Boiler efficiency
		Differentiate impulse and reaction turbines & Write condition for maximum efficiency.
		Identify utilities of thermal and hydraulic energy & Analyze performance of water turbines.
		Predict of results of prototypes from the model test & Examine Cavitations in turbines
		Demonstrate working cycles of gas turbines & Explain methods to improve efficiency and specific output
		Classify jet propulsion engines & Evaluate Propulsive efficiency, thermal efficiency jet propulsion engines.
5	Finite Element Analysis (MEC606)	Solve differential equations using weighted residual methods
		Develop the finite element equations to model engineering problems governed by second order differential equations
		Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional elements
		Apply the basic finite element formulation techniques to solve engineering problems by using two dimensional elements
		Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system
		Use commercial FEA software, to solve problems related to mechanical engineering
6	Mechatronics (MEC605)	Identify the suitable sensor and actuator for a mechatronics system
		Select suitable logic controls
		Analyse continuous control logics for standard input conditions
		Develop ladder logic programming
		Design hydraulic/pneumatic circuits
		Design a mechatronic system

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE　　　　　　　　**SEM: VII**　　　　　　　　**SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Machine Design -II (MEC701)	Design of spur, helical, bevel and worm Gears
		Design of rolling contact bearings
		Design of hydro dynamically lubricated bearings
		Design of cam and roller follower
		Design and selection of Belts
		Design and selection of Belts
2	CAD/CAM/CAE (MEC702)	Identify proper computer graphics techniques for geometric modeling
		Transform, manipulate objects and store and manage data.
		Prepare part programming applicable to CNC machines
		Use rapid prototyping and tooling concepts in any real life applications
		Identify the tools for Analysis of a complex engineering component
		Transform manipulate objects store and manage data.
3	Mechanical UtilitySystems (MEC703)	Describe operating principles and performance of reciprocating compressors.
		Describe operating principles and performance of rotary compressors
		Describe operating principles of pumps
		Describe operating principles of centrifugal pumps and Illustrate and analyze characteristic curves of pumps
		Interpret possibilities of energy conservation in pumping systems
		Interpret possibilities of energy conservation in compressed air systems
4	Production Planning andControl (MEC704)	Illustrate production planning functions and manage manufacturing functions in a better way
		Develop competency in scheduling and sequencing of manufacturing operations
		Forecast the demand of the product and prepare an aggregate plan
		Develop the skills of Inventory Management and cost effectiveness
		Create a logical approach to Line Balancing in various production systems
		Implement techniques of manufacturing planning and control
567	Operations Research (MEE7019)	Formulation & optimization of Industrial problem & Techniques by Linear Programming Problem
		Formulation and analysis of Engineering problems for optimization of cost and time
		Apply and analyze mathematical optimization functions to Replacements and Queuing.
		Criterion and optimal cost effective strategies in various applications in industry
		Optimization to various inventory cost control in industry
		Distinguish Recent trends in Automobiles
6	Power Plant Engineering (MEE7012)	Comprehend various equipment/systems utilized in power plants
		Demonstrate site selection methodology, construction and operation of Hydro Electric Power Plants
		Discuss working, site selection, advantages, disadvantages of steam power plants
		Discuss operation of Combined Cycle Power Plants
		Discuss types of reactors, waste disposal issues in nuclear power plants
		Illustrate power plant economics

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE **SEM: VIII** **SCHEME:CBGS**

COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Design of MechanicalSystems (MEC801)	Apply the concept of system design
		Design of hoisting mechanism of EOT crane
		Design belt conveyor systems
		Design pumps for the given applications
		Design engine components such as cylinder, piston, connecting rod and crankshaft
		Design of machine tool gearbox
2	Refrigeration and AirConditioning (MEC803)	Demonstrate fundamental principles of refrigeration and air conditioning
		Identify and locate various important components of the refrigeration and air conditioning system
		Illustrate various refrigeration and air conditioning processes using psychometric chart
		Design Air Conditioning system using cooling load calculations.
		Estimate air conditioning system parameters
		Demonstrate understanding of duct design concepts
3	Industrial Engineeringand Management (MEC802)	Techniques of Industrial engineering
		Value engineering and value analysis.
		Work study, method study & time study
		Work study design job evaluation and wage administration & business process reengineering
		Facility design
		Cost accounting and financial management
4	Automobile Engineering (MEE8026)	Comparing Transmission systems, Live axle and differential
		Necessity of Brakes, Steering and Front axles
		Necessity of Suspension, Wheels and Tyres
		Demonstrating the Electrical system
		Analysis the forces concerned with Body Engineering
		Distinguish Recent trends in Automobiles
5	Renewable Energy Sources (MEE8022)	Demonstrate need of different renewable energy sources
		Discuss importance of renewable energy sources
		Discuss various renewable energy sourses in Indian context
		Calculate and analyse utilization of solar and wind energy
		Illustrate design of biogas plant
		Demonstrate basics of hydrogen energy

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: PG(FE)   **SEM: I**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Energy scenario, policy and environment	Assess role of energy in global economic development.
		Analyze energy consumption pattern in India and its effect on economic development.
		Determine impact of International energy policy on national energy growth.
		understand the Indian and International energy policies
		Analyze Industrial Energy and environment
		Understand relationship between energy, ecology and environment
2	energy efficiency in thermal system	Define the reasons of incomplete combustion and attempt to reduce the subsequent impact.
		Understand the ENCON opportunities and Furnace.
		Understand the ENCON opportunities and Boilers.
		Measure performance evalution of cogeneration
		Determine ENCON opportunities in thermal systems.
		Measure and improve the quality of recovered waste energy
3	conventional power plant	Distinguish between energy & power and understand power plant cycles in detail
		Understand steam systems and steam power plant installation, operation, maintenance, and life cycle economics
		Understand Hydroectric power plants site selection and elements.
		Understand Gas Turbine power plants site selection and elements.
		Understand nuclear power plant installation, operation, maintenance, and life cycle economics
		Learn the advantages and disadvantages of combined operation of power plants
4	utilization of solar energy	Estimate and quantify available solar radiation
		simulation of solar processes
		Understand the Solar Photovoltaic cells
		To identify and describe the basic principles and methodologies of solar systems
		Judiciously design the solar energy collection system
		Understand basic economics ofsolar energy systems
5	Energy audit and management	To identify and describe present state of energy security and its importance
		To identify and describe the basic principles and methodologies adopted in energy audit of an utility.
		To understand the energy audit principles
		To describe the energy performance evaluation of some common electrical installations and identify the energy saving opportunities.
		To describe the energy performance evaluation of some common thermal installations and identify the energy saving opportunities
		To analyze the data collected during performance evaluation and recommend energy saving measures

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: PG(FE)   **SEM: II**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Advances in energy audit and management	Understand detailed energy auditing procedure and Distinguish between energy auditing stages.
		Understand the Energy Auditing in PAT Cycle
		Roles of Energy manager and Energy audit
		Monitor and setting target of energy consumption.
		Know the framework of PAT cycle and understand M&V audit
		Carry out commercial energy audits
2	Energy efficiency in electrical systems	Calculate losses in electrical and power systems and improve its energy efficiency.
		Determine ENCON opportunities in Fan, Blowers and Compressors
		Determine ENCON opportunities in HVAC Systems
		Determine ENCON opportunities in electrical motor systems.
		Determine ENCON opportunities in fluids handling systems.
		Determine ENCON opportunities in lighting systems.
3	Renewable and sustainable energy systems	Know sustainability initiatives for reducing energy impacts on environment.
		Understand the solar energy Technology
		Understand the Wind power Technology
		Understand the role of renewable energy in climate change.
		Determine the efficient solar and wind energy technology.
		Know the current trends in sustainable and renewable energy.
4	Fuels combustion and emission control	Distinguish between conventional, non-conventional and nuclear fuels.
		Understand the types and production process of fuels.
		Determine the requirements for complete combustion process.
		Understand the Emission control methods
		Analyse the effects of emission control
		Understand the combustion of fuels
5	Research methodology	Prepare a preliminary research design for projects in their subject matter areas
		Accurately collect, analyze and report data
		Understand th IPR
		Review and analyze research findings
		Understand the various Research techniques for research data collection
		Present complex data or situations clearly

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON

NAAC Accredited B++

DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR 2017-18

YEAR: SE   **SEM: III**   **SCHEME:CBCS**

COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics - III	Solve the Ordinary and Partial Differential Equations using Laplace Transformation.
		Apply Fourier series to Solve Ordinary and Partial Differential Equations.
		Solve initial and boundary value problems involving ordinary differential equations
		Fit the curve using concept of correlation and regression.
		Apply bilinear transformations and conformal mappings
		Identify the applicability of theorems and evaluate the contour integrals
2	Surveying - I	Gain the basic understanding of the principles, surveying measurement and errors.
		Ability to use modern survey equipment to measure angles and distances.
		Measure differences in elevation, draw and utilize contour plots, and calculate volumes for earthwork
		Improve ability to completing the assigned field work.
		To perform Theodolite, temporary adjustments, different methods of Theodolite traversing & error in Theodolite traversing.
		The students will also know principle, purpose, suitability of tacheometry, different methods of tacheometry, stadia formula, stadia diagram & tables.
3	Strength of Materials (SOM)	To analyze the flexural members for its structural behaviour under the effect of flexure (bending), shear & torsion either indepenently or in combinations thereof
		Interpret the concepts of shear force, bending moment, axial force for statically determinate beams & compound beams having internal hinges & subsequently, its application to draw shear force, bending moment & axial force diagrams
		Evaluate the deformation behaviour of axially loaded columns considering wind load (chimneys, dams etc.) & behaviour of direct & bending stresses with various safety conditions
		Study the behaviour of the structural members under the action of axial load , bending & twisting moment
		Synthesize the deformation behaviour of axially loaded columns having different end condtions & further evaluate the strength of such columns
		Understand & determine engineering properties for metals & non- metals
4	Engineering Geology	Explain the significance of geological studies in design of civil engineering structure and demonstrate the knowledge of geology to explain major geological processes.
		Summarize the properties of building stone Classify the minerals and explain formation, properties and engineering applications of different types of rocks.
		Explain various geological structures ,relate their significance in the design and construction of major civil engineering projects.
		Categorize physiographic divisions of India and describe their characteristics
		Describe geological investigation methods, advantages and disadvantages caused due to geological conditions during the construction of dam and tunnel.
		Identify subsurface information and groundwater potential sites through geophysical investigations & Apply geological principles for mitigation of natural hazards like landslide, volcano and earthquake.
5	Fluid Mechnics-I	To define the fluid properties & basic fundamental concepts along with identification of fluids types with relevance in civil engineering
		To discuss the various hydrostatic fundamentals like Pascal's laws, hydrostatic law, buoyancy principle & them distinguish role in civil engineering
		To illustrate the fluid kinematics & interpret ate their methodology towards engineering needs
		To discuss the Bernoulli's equation & its role in civil engineering
		To examine the role of various flow measuring devices & employ them in engineering practices & projects
		To choose the appropriate equipment's as per engineering need & compare various devices accordingly

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: SE   **SEM:IV**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics - IV	Solve the system of linear equations using matrix algebra with its specific rules.
		Illustrate basics of vector calculus.
		Apply the concept of probability distribution and sampling theory to engineering problems.
		Apply principles of vector calculus to the analysis of engineering problems.
		Identify, formulate and solve engineering problems.
		Illustrate basic theory of correlations and regression.
2	Surveying - II	Quantify the safety performance of horizontal curves on two-way,two-lane rural roads relative to tangent segments.
		Vertical curve provides a transition between two sloped roadways dependent on the intended design speed for roadway.
		Establish grids of levels over a site and use them to establish contours and carry out volumn calculations.
		Measure slope distance, vertical angle, and horizontal angle from total station.
		Determining & defining land ownership and boundaries
		Identify local survey terminologies like tehsildar, 7/12, utara, namuna8, etc. Introduction to Survey of India Department; Department of Registration and Stamps, Maharashtra.
3	Structural Analysis - I	Analyze statically determinate portal frame, skew frame & gable frame with & without internal hinge & to find out the internal forces such as axial force, shear force, BM & twisting moment etc.
		Apply basic concepts, principles & methods to evaluate slope & deflection of beams, frames & trusses
		Analyze eccentrically loaded columns, buckling behavior of axially & transversely loaded beam columns
		To obtain the response of the beams & trusses under rolling loads & subsequently to obtain absolute max. bending moment
		To analyses the structures such as arches & suspensions bridges & three hinged stiffening girders
		Understand the concept of unsymmetrical bending & shear center & its application in solving the problems of structural mechanics
4	Buldding Design and Drawing (BDD)	Explain various provisions of IS CODE and NATIONAL BUILDING CODE regarding planning, permissions and relate byelaws.
		Describe the types of structures and its various components like doors, windows, staircase, foundations etc.
		Design various components of buildings as well as buildings as a whole. Draw and explain plans, elevation and one-point perspective and two point perspective of buildings.
		Apply principles of planning, architectural planning and building bye laws while designing and preparing building drawings.
		Describe planning of green buildings and analyze certification methods.
		Prepare computer aided drawing (cad) using any one available software.
5	Fluid Mechnics-II	To identify different types of pipe flow & compute fluid velocity undertaking minor & major losses.
		To explain water hammer phenomenon & solve pipe network
		To illustrate the compressible flow & analyze Mach number
		To distinguish different types of boundary layer phenomenons & determine their applications & characteristics
		To establish Reynold's equation & classify types of flow
		To evaluate pressure drop in pipe flow by applying Hagen – Poiseuille's equation
6	Bulding Material and Construction Technlogy	Explain different types of building materials and their requirements.
		Describe the manufacturing Process and Properties of Basic Construction Materials like Rocks (Stone), bricks, roofing tiles, ceramic tiles, Concrete blocks, flooring tiles, paver blocks, lime, cement, plaster of Paris and Damp -proofing and water proofing materials
		Explain manufacturing process and properties of concrete. Describe laboratory tests. Explain Admixtures, their tests and chemistry and compatibility with concrete
		Describe manufacture, properties and applications of glass fibre reinforced plastic, Timber (wood).
		Design Concrete mix by I.S. method. Explain manufacture process of Ready mix concrete.
		Describe Masonry Construction and Masonry Finishes and Described the different types of floor and roofs coverings & different types of Formwork Materials used and design considerations.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE   **SEM: V**   **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Structural Analysis - II	The students will be able to understand the behavior of various statically indeterminate structures.
		The students will be able to understand the structures including two hinged arches.
		They will be able to analyze these structures to find out the internal forces.
		Further, the students shall be able to extend the knowledge gained in this subject.
		further in the subjects related to structural engineering mechanics in the higher years of their UG programme.
		The knowledge gained in this subject shall be useful for application in the structural design in later years.
2	Geotechnical Engginering-I	Provides guidance for analyzing stability of slopes and soft rocks.
		Know behavior and strength of the soil such as earth retaining, rigit retaining wall.
		Identify different types of shallow foundations and establish the most economical design of structures.
		Know the effect of dynamic interaction between pile-foundations & soil on strength demand spectra
		Observe tensile strength of fibre reinforced soil increases with increasing dry density.
		Investigate effects of foundation stiffness on failure mechanisms & strength of foundation soil.
3	Applied Hydrolics - I	Apply the momentum principle to pipe bend problems & moment of momentum equation to sprinklers
		Demonstrate the model laws to real life devices
		Understand the mechanism of impact of jets on stationary & moving objects
		Solve the problems related to hydraulic turbines
		Understand the phenomenons invoved in centrifugal pumps
		Demonstrate the principles, mechanims & working of various hydraulic machines such as ram, press, accumulator, intensifier , cranes & lift
4	Transportation Engginering - I	Explain different transportation systems in Society.
		Explain different transportation systems and their planning
		Explain planning, construction and maintenance of Railway tracks.
		Explain planning, construction and different types of airports.
		Explain in deatiled the maintenance of airports.
		Describe Water Transportation system in details and its facilities & including harbors docks, port facilities.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: TE **SEM: VI** **SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Geotechnical Engginering-II	Provides guidance for analyzing stability of slopes and soft rocks.
		Know behavior and strength of the soil such as earth retaining, rigit retaining wall.
		Identify different types of shallow foundations and establish the most economical design of structures.
		Know the effect of dynamic interaction between pile-foundations & soil on strength demand spectra
		Observe tensile strength of fibre reinforced soil increases with increasing dry density.
		Investigate effects of foundation stiffness on failure mechanisms & strength of foundation soil.
2	Design and Drwing of Steel Sturcture	The students will be able to understand the design of tension member,
		The students will be able to compression member,
		The students will be able to laterally supported beam,
		The students will be able to laterally un-supported beam by limit state method.
		They will be able to design truss.
		Students will be able to independently design steel structures using relevant IS codes
3	Applied Hydrolics - II	Understand the impact of engineering solutions for boundary layer theory in the context of submerged bodies
		Develop the basic concept for flow around submerged bodies & relate it with the fluid machines
		Identify the different attributes related to open channel flow & determination of most economical channel
		Establish the application of Bernoulli's equation to open channel flow
		Understand the specific energy & it's applications
		Design irrigation channel after application of Kennedy's & Lacey's silt theory
4	Transportation Engginering - II	Provides guidance for analyzing stability of slopes and soft rocks.
		Know behavior and strength of the soil such as earth retaining, rigit retaining wall.
		Identify different types of shallow foundations and establish the most economical design of structures.
		Know the effect of dynamic interaction between pile-foundations & soil on strength demand spectra
		Observe tensile strength of fibre reinforced soil increases with increasing dry density.
		Investigate effects of foundation stiffness on failure mechanisms & strength of foundation soil.
5	Environmental Engineering-I	Evaluate the students are able to make the planning, design and construction of water systems
		Assess the students are able to make the water related infrastructural facilities
		Recognize a practical alignment to that they can give practical solutions to our society
		Diagnose a everyday orientation to environmental problems in our society
		Assess the depth of students about a theoretical knowledge in engineering sciences and in research field+E187
		Gauge the positive responsive vocational attitudes, initiative creative thinking in their mission as engineers
6	Theroy of Reinforced Ptestressed Concrete	The students shall use the analysis & design of various elements of the reinforced concrete structures.
		The students shall use beam, slab, column, footings using the concept of working stress method.
		The student shall apply the knowledge gained in the subjects such as engineering mechanics
		The students shall use strength of materials structural analysis in analyzing the structural.
		The students shall use components further implement it for the designing these elements.
		Further the student shall use the tutorials to solve more practice problems.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE　　　　　　**SEM: VII**　　　　　　**SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Limit State Method for Rainforced Concrete Structure	Describe ultimate strength theory, stress block. Analyze and design singly reinforced section and doubly reinforced sections using Whitney's approach
		Explain various limit states and interpret IS 456 provisions.
		Analyze and design members Limit state of collapse in flexure, shear, bond, torsion and serviceability. Analyze and design singly and doubly reinforced rectangular and T sections. Explain and draw reinforcement detailing.
		Analyze and design one way and two way slabs
		Analyze and design columns subjected to combined axial and uni-axial as well as biaxial short and slender column.
		Analyze and design single and combined footings, slab beam type footing and strap footing subjected to axial load and moments.
2	Quantity Survey Estimation and Valuation (QSEV)	To read and interpret plans, sections, detailed drawings and specifications, calculate quantities of various items and prepare estimate a construction project.
		Prepare bar bending schedules and draw mass haul diagrams
		Calculate the market rates of basic materials Review the current market rates for labour and material required for construction, perform rate analysis and compare with DSR
		Draft the specifications for various items required for construction.
		Draft tenders, prepare valid contract documents.
		Explain different terms related to valuation and conduct valuation of property
3	Irrigation Engineering	Explain basic requirements of irrigation and analyze its advantages, disadvantages, types of projects, national perspective.
		Describe Crops and their water requirements. explain irrigation methods . analyze soil-water relationship.
		Evaluate the hydrological cycle and rainfall measurements. Calculate runoff, flood discharge. Explain methods of deriving unit hydrograph, S-hydrograph.
		Apply knowledge on ground water, well hydraulics to estimate the safe yield and ground water potential.
		Explain investigations and planning of reservoir. calculate capacity and fixation of control levels. describe reservoir sedimentation and its control.
		Analyze forces acting on dams and carry out stability analysis. Explain rock-fill dams. Arch and buttress dams. Describe types of spillways, other energy dissipating devices.
4	Environmental Engineering - II	Evaluate the role of sanitation in the urban water cycle, its relation to public health and environment
		Develop rational approaches towards sustainable wastewater management via pollution prevention
		Analysis of physical, chemical and biological processes and their mutual relationships within various sanitation components
		Gauge the development of innovative approaches to the provision of adequate and sustainable sanitation services
		To apt the treatment, Reclamation and resource recovery and re-use at both centralized and decentralized levels
		To acquire Environmental pollution in relation to properties and its occupational hazards. As compare to quality standards and to know the control measures.
5	Elective - I Prestressed Concrete	Explain the Basic concept of Prestressed Concrete, materials used and their properties, methods, techniques and systems of prestressing.
		Perform Analysis of Prestressed concrete sections by different methods
		Calculate the Losses in Prestress and deflections of Prestressed Concrete Members for various conditions.
		Design Prestressed Concrete Sections for Flexure and shear.
		Calculate End zone stresses in prestressed concrete members Introduction to application of prestressing to continuous beams and slabs, linear transformation and concordancy of cables.
		Explain application of prestressing to continuous beams and slabs, linear transformation and concordancy of cables.
6	Elective - II RCRM	Explain Causes of deterioration of concrete structures durability
		Describe the Condition Survey, Evaluation and Damage Assessment of buildings. explain Destructive, semi-destructive and non-destructive methods
		Compare various repair Materials and Repair Methodologies including use of polymer concrete.
		Explain Protection of Concrete Structures using Protective materials ,Systems like integral, crystalline, coatings, membranes and Thermal protection coatings
		Explain corrosion protection methods including corrosion inhibitors, Corrosion resistant steels, cathodic protection, Pre-packed zinc sacrificial anode, Snap-on zinc mesh anode CP system.
		Describe planning Maintenance of Concrete Structures, preventive maintenance , Statutory legislation and obligation

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: BE　　　　　　**SEM: VIII**　　　　　　**SCHEME:CBGS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Design and Drwing of reinforced concrete structure	Analyze and Design simple raft subjected to symmetrical loading using limit state method
		Analyze and Design of dog legged and open well type staircase using limit state method
		Perform the complete analysis and design of residential and industrial buildings.
		Analyze and Design cantilever and counter fort type retaining wall using limit state method
		Analyze and Design Circular and rectangular of Water Tanks at ground level, underground and overhead water tank both by IS coefficient and - approximate methods, including supporting structure for overhead water tanks using working stress method
		Analyze and Design Circular and rectangular of Water Tanks at ground level, underground and overhead water tank both by IS coefficient and - approximate methods, including supporting structure for overhead water tanks using working stress method
2	Construction Engginering	Acquire the knowledge of concepts, principles and applications of soil under dynamic loading
		Develop an ability to design with reference to code provisions and solve the practical soil problems subjected to vibrations.
		Provide an impetus to new developments in related dynamic topics.
		To calculate owning and operating costs, evaluate maintenance and repair costs.
		To understand the complex processes involved in the construction of tunnels
		To apply the concept of mass concreting, vacuum concreting and modern slip forms in construction projects.
3	Construction Management	Apply Laplace Transforms to solve Electronics & Telecom Engineering problems.
		Apply the knowledge of management functions like planning, scheduling, executing and controlling to construction projects.
		To demonstrate their capability for preparing the project networks to work out best possible time for completing the project.
		Exercise the time- cost relationship in practices.
		To implement the safety aspects during the execution of civil engineering project & quality aspects during the execution of civil engineering project
		Develop managerial skills among the students which will be helpful for them in future during actual execution of projects.
4	Elective - II Disaster Management	State the global and Indian scenario of disaster, importance of study in human life, Direct and indirect effects of disasters.
		Analyze various Natural Disaster and Manmade disasters, causes and management for mitigation.
		Explain Disaster Management, Policy and Administration
		Explain Institutional Framework for Disaster Management in India, NIDM and NDMA. Applications of GIS, Remote sensing and GPS.
		Explain Financing Relief Measures including raising finance, Legal aspects related to finance raising as well as overall management of disasters. International relief aid agencies and their role in extreme events
		Explain Preventive and Mitigation Measures at Pre-disaster, during disaster and post-disaster stages. Analyze Risk mapping, assessment.
5	Elective - II Advanced Repairs and Rehabilitation of Structures	Describe the reasons for strengthening of structures.
		Explain structural strengthening of RC members by jacketing. Describe external post-tensioning plate bonding, textile reinforced concrete
		Analyse Specialized repairs methods like Electro chemical repair using re-alkalization and chloride extraction techniques. Explain repair of various structures like tunnels, runways etc.
		Explain Retrofitting by all types of Composite Materials
		Explain Seismic Retrofitting of existing RC structures. Analyze use of FRP for retrofitting of damaged structures & plan Protection and Maintenance schedule all structures
		Describe Special care in repair and rehabilitation of heritage structures

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18
YEAR: PG(FE)　　　　　SEM: I　　　　　SCHEME:CBCS
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Probability and Statistics	Able to review the quantitative data and draw results from it using probability distribution to project management.
		Apply sampling techniques to construction industry
		Apply correlation analysis techniques and develop linear regression equation between various civil engineering parameters
		Apply regression analysis in resources management and prediction of concrete structures
		Predict the performance of a particular system, based on past performance using simulation and other tools.
		Apply Griffi's waiting line models and other such models to decide the optimum number of servicing units required for a prime mover
2	Management and project planning in construction	Analyze and explain the contributions of various researchers Henry Fayol, Fredrick Taylor etc. in modern management.
		explain the concept of project Life cycle, the responsibilities of project managers & PMCs, define the scope of the Project and various documentations required on major projects
		Prepare project schedule using different methods using primavera, MSP. Apply CPM PERT techniques.
		Explain project controlling and related issues. explain incentives & work study applications for civil engineering projects
		Analyze various domains of construction management as regards to mobilization, demobilization, co-coordinating, communicating, reporting and training aspects
		Identify the causes of accidents on construction site, suggest Preventive measures and discuss various acts for safety.
3	Construction Contract Administration and Management	Explain the basic procedure of bidding for construction projects
		Explain different types of contract along with their suitability in construction practices with various issues like specifications, breach of contract.
		Explain different methods for resolving the disputes arisen
		Analyze various industrial acts & their relevance to construction Industry
		Compare bailment procedure and related issues
		Explain injuctions, indemnity and guarantee
4	Repairs, Rehabilitation & Retrofitting of Structures	Explain Need for strengthening due to various reasons and explain holistic models for deterioration of concrete
		Explain Condition Survey for identification and estimation of damage and Non-Destructive and Destructive Testing Methods. analyze, interpret the data and draw conclusions.
		Compare various Repair Materials and their selection, essential parameters
		Analyze different Repair/ Rehabilitation Techniques for materials, procedures advantages etc.
		Prepare Guidelines for Repair and Rehabilitation Work and Post repair inspection and maintainace.
		Explain Seismic retrofitting and Maintenance of Heritage Structures
		Analyze Repair of water retaining structures, hydraulic structures, Pavements and Runways, bridges, sewage treatment plants Tunnels, industrial structures- Specialized repairs for chemical disruption, fire, marine exposure etc.
5	Disaster Management and Mitigation Measures	State the global and Indian scenario of disaster, importance of study in human life, Direct and indirect effects of disasters.
		Analyze various Natural Disaster and Manmade disasters, causes and management for mitigation.
		Explain Disaster Management, Policy and Administration
		Explain Institutional Framework for Disaster Management in India, NIDM and NDMA. Applications of GIS, Remote sensing and GPS.
		Explain Financing Relief Measures including raising finance, Legal aspects related to finance raising as well as overall management of disasters. International relief aid agencies and their role in extreme events
		Explain Preventive and Mitigation Measures at Pre-disaster, during disaster and post-disaster stages. Analyze Risk mapping, assessment.

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON
NAAC Accredited B++
DEPARTMENT OF CIVIL ENGINEERING
ACADEMIC YEAR 2017-18

YEAR: PG(FE)   **SEM: II**   **SCHEME:CBCS**
COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Advanced Construction Technology	Summarize the construction of underwater and underground construction and various activities involved, machinery used and precautions
		Explain various form systems Formwork and design requirements, materials used.
		Explain Construction systems for High Rise structures and Prefabricated Construction techniques, Special techniques required for construction and maintenance.
		Describe construction of transporting facilities like Roads and Bridges, Railways and Ports.
		Prepare action plan for the various construction activities for Power Generating Structures.
		Prepare action plan for Hydro power station, Atomic power Stations, Thermal power station, Windmills, Solar Power, transmission towers.
2	Infrastructure Development	Describe the role of infrastructure in overall development of the nation. Analyze global and Indian perspective and roles of various agencies involved in construction industry
		Classify infrastructure projects and explain major achievements in infrastructure sector in India.
		Describe financing of infrastructure projects and various issues like GDP and its role, government policies & strategies, sources of financing infrastructure projects, FDI in construction industry.
		Explain the concept of public private partnership & its implementation in practice. compare various PPP models involved in construction industry and role of role and functions of PMC in infrastructure projects
		Explain issues related to infrastructure development like environmental clearances. Role of FICCI.
		Explain delay and failures in infrastructure projects. Analyze causes of delay; calculate cost over-run and time over runs.
3	Project Economics & Financial Management	Explain the principles of economics and analyze factors bearing on size of firms, obstacles to growth of firms.
		Analyze the various issues affecting working capital and estimate the working capital required on a construction project
		Calculate cost implication to different forms of construction. Calculate break-even analysis.
		Explain financial planning and various issues like stock, borrowings, debentures, shares, venture capital financing, SEBI regulations, micro financing.
		Perform capital budgeting and project portfolio analysis
		Explain corporate sector and corporate tax planning, role of financing institutes in construction, CIDC-ICRA grading.& various terms related to accounting and prepare construction accounts.
4	Energy Conservation Techniques in Building Construction	Explain energy systems, production and conservation. Explain energy and its impact on environment like heat- iceland effect, greenhouse gas effect, global warming.
		Explain energy management system. Prepare energy audit and explain post audit activities.
		Prepare energy efficient & environment friendly design of heating and ventilation systems. Explain solar energy fundamentals and prepare active solar and passive solar design. Explain principles and design of green buildings.
		Describe Energy Saving Opportunities in various Building Services, like Lighting Systems, Air Conditioning Systems, Water Heat Recovery, and Savings in Pumps-Fans-Compressed air systems.
		Explain energy systems and savings through case studies.
5	Research Methodoly	Explain primary characteristics of quantitative research and qualitative research. Explain describe Need of Research in Business and Social Sciences, identify Issues and Problems in Research.
		Describe and compare Types of Research like Basic Research, Applied Research, Descriptive Research, Analytical Research etc.
		Explain Research Design and Sample Design techniques.& the stages in Research process such as identification of problem to Preparation of Research Report
		Explain Formulation of Research Problem and related issues like Interest, Data Availability, Choice of data, Analysis of data, Generalization and Interpretation of analysis.
		Explain the Preparation of the report on conclusion reached and its contents like Validity Testing & Ethical Issues, Suggestions and Recommendation

SHIVAJIRAO S. JONDHLE COLLEGE OF ENGINEERING & TECHNOLOGY, ASANGAON

NAAC Accredited B++

DEPARTMENT OF FIRST YEAR ENGINEERING

ACADEMIC YEAR 2017-18

YEAR: FE   **SEM: I**   **SCHEME:CBC**

COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics -I (FEC101)	Apply the knowledge of matrices for solving system of linear euations and coding and Decoding of data.
		Differentiate solve the partial derivative and the concepts is used in wave equation and heat equation of various orders
		Explain the concept of imaginary numbers and for solving simple polynomial equation .
		Demonstrate the concept of Mean value theorem and expansion of standard and non standard function
		Apply the knowledge of successive differentiation to solve n^{th} order derivative
		Demonstrate and implementation of numerical solution algorithm appiied to the problem like interpolation to find intermediate value.
2	Applied Physics-I (FEC102)	Explain the concept of crystallography & to use XRD technique for analysis of crystal structure.
		Explain fundamentals of Quantum Mechanics & use the knowledge of Quantum Mechanics to Uncertainty principle & motion of free particle.
		To comprehend the basic concepts of semiconductor physics & apply this knowledge to electronic devices like LED, Solar cell.
		Apply the knowledge of Superconductivity to SQUID & MAGLEV.
		Learn the principles behind the acoustic design of a hall & use this in the proper design of a Hall/Auditorium.
		Use the knowledge of Piezoelectric & Magnetostriction effect for the production of Ultrasonic waves & apply this knowledge in industry(cutting,welding,flaw detection),medical field.
3	Applied Chemistry-I (FEC103)	Calculate the types & percentage of impurities in water, Apply the knowledge of types of hardness of water and its estimation.
		Apply the knowledge of various softening and disinfecting methods, Understand methods of purification of water as per the standards.
		Understand the chemistry of polymers, Apply the knowledge of various polymers, their synthesis, properties and uses along with their fabrication techniques.
		Understand mechanism of lubrication and Apply the knowledge of lubricants, types, properties and mechanisms to avoid frictional resistance.
		Apply the knowledge of thermodynamics in studying different chemical systems in equilibrium obeying Gibb's phase rule.
		Demonstrate the knowledge of Portland cement and carbon nanomaterials.
4	Basic Electrical Engineering (FEC104)	To understand fundamentals of DC circuits and apply knowledge for analysing network theorems in DC circuits.
		To learn the fundamentals and analyse single phase AC circuits.
		To learn the fundamentals and analyse three phase AC circuits.
		To learn the basic operation and analyse the performance of single phase transformer.
		To understand the construction and basic operation of DC motors and generators.
5	Engg.Mechanics (FEC105)	It is the basic concept that is needed by a Civil Engineering professional to solve complex engineering problems involved in the analysis and design of structures
		Ability to construct free body diagrams and to calculate the reactions necessary to ensure static equilibrium.
		Ability to solve mechanics problems associated with friction forces and space forces
		Describe the motion of a particle in terms of its position, velocity and acceleration in different frames of reference and to analyze the forces causing the motion of a particle
		Develop concepts of rigid body kinematics and dynamics with an emphasis on the modeling, analysis, and simulation of how forces produce motion of rigid body systems..
		Determine simple dynamic variables and solve simple dynamic problems involving kinetics, energy and momentum
6	Environmental Studies (FEC106)	Illustrate Depleting Nature of Environmental Resources, Global Environmental Crisis, Ecosystem concept
		Adapt to 3R (Reuse, Recovery, Recycle)
		Study different control measures related to Environmental Pollution
		Illustrate and analyze various Case Studies related to Environmental Legislation
		Demonstrate the working of Renewable energy sources & Equipment's
		Illustrate the Techniques of Disaster Management and Green Building

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DEPARTMENT OF FIRST YEAR ENGINEERING

ACADEMIC YEAR 2017-18

YEAR: FE	SEM: II	SCHEME:CBCS

COURSE OUTCOMES

learner will be able to

SR.NO.	SUBJECT	COURSE OUTCOMES
1	Applied Mathematics -II (FEC201)	Apply the knowledge of Beta and Gamma function of the type to solve the exponential integral which can not be solved by the normal integration.
		Use to solve the different type of integral calculus problem.
		Solve and analyse the Differential equations and used in electrical circuit and motion of a particle.
		Use double integral to compute volume of solids and area of plane.
		Use triple integral to find the volume of solid.
		Find and analyse area, mass of lamina and volume of solid by using double and triple integration.
2	Applied Physics-II (FEC202)	To comprehend the principle of interference and diffraction & apply it to determine radius of curvature of lens & wavelength of source of light.
		Explain the principle of laser, types of laser & apply this knowledge in Holography, industry & medical field.
		Identify the type of O.F. , losses in O.F. & application of O.F. in various field.
		Comprehend the basic concepts of electrodynamics, Maxwell's equation & Apply this knowledge in telecommunication system.
		Apply the concept of electromagnetism in focussing system & CRO.
		Explain the significance of Nanoscience & Nanotechnology & explain construction of important tools in nanotechnology.
3	Applied Chemistry-II (FEC203)	Apply the knowledge of different types of fuels, including their production and refining methods and combustion mechanics.
		Calculate the quantity of air and oxygen required for the complete combustion of fuels and carry out analysis of fuels.
		Identify types of corrosion and factors affecting it related to problems affecting all industries and Identify different types of corrosion control methods to study corrosion control in various industries.
		Illustrate composition and properties of different types of alloys and the process of powder metallurgy and Understand the uses of various alloys.
		Illustrate principles of green chemistry and Calculate atom economy by various methods of synthesis. Incorporate the knowledge of green synthesis of various chemicals.
		Understand the chemistry of composite materials. Illustrate properties and applications of different types of composite materials.
4	Engineering Drawing (FEC204)	Introduction the basic principles of projections in 2D drawings and AUTO CAD.
		Apply the basic principles of projections in 2D drawings and AUTO CAD.
		Apply the basic principles of projections in converting 3D view to 2D drawing.
		Understand projection of solids, section of solids and Development of solids.
		Read a given drawing and Use CAD tool to draw different views of a 3D object.
		Visualize an object from the given two views and Use CAD tool to draw an object in 3D.
5	Structured Programming Approach (FEC205)	illustrate basic terminologies and various models of computation and will be able to write and draw algorithms and flowcharts
		to Illustrate the concept of data types, variables and operators using C.
		to learn the concept of flow of controls, Design and Implement control statements, branching and looping constructs in C
		understand and Apply function concept on problem statement and will be able to understand recursion.
		learn the concept of flow of controls and program structures and will learn the use of arrays with structures and unions.
		learn the use of pointers and file operations.
6	Communication Skills (FEC206)	Comprehend the concept of business communication and ethics, Apply above studied concept in practical life & in business organization.
		To apply basic grammar in written and oral communication.
		Categorising different writing formats of business letters and application in organizational communications
		Summarising technical and industry related passages not more than 400 words
		Describing technical objects, framing definition, writing instructions
		To demonstrate the knowledge related to ICT(Information communication technology)