

Khandesh College Education Society's
COLLEGE OF ENGINEERING & MANAGEMENT,
JALGAON

Metrics No: 2.6.1

Title: PO, PEO, PSO and CO

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**KHANDESH COLLEGE EDUCATION SOCIETY'S
COLLEGE OF ENGINEERING & I.T, JALGAON**
(Approved by AICTE, New Delhi, Affiliated to DBATU, Lonere; KBCNMU, Jalgaon
MSBTE, Mumbai & Recognised by Govt. of Maharashtra)
An ISO 9001-2008 Institution and NAAC ACCREDITED GRADE - 'B' (CGPA - 2.53)
Visit us At: www.coeit.kces.in, E-mail - coeit.inquiry@gmail.com

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Department of Electronics and Telecommunication

Vision

Inculcate Competencies, Skills and Values to Meet Global Challenges in the Field of Electronics and Telecommunication Engineering.

Mission

- To enhance the teaching-learning process by adopting innovative practices to create globally competent Electronics and Telecommunication engineers.
- To equip students with technical competencies including interdisciplinary knowledge, soft skills and entrepreneurship skills with a sense of social responsibility.
- To strengthen research culture providing sustainable solutions in the domain of Communication, Signal Processing, VLSI etc.
- To encourage networking with alumni, industry and other institutes.

HOD Message:

With great pleasure I introduce you to the Department of Electronics and Telecommunication Engineering of K.C.E.S's College of Engineering & Management, Jalgaon. The department nurtures and moulds the students to enter in the fast changing pragmatic world yet maintaining the sensitivity in them.

The Department of Electronics and Telecommunication Engineering, established in 2001, is one of the most dynamic departments of K.C.E.S's C.O.E.M. The department has consistently maintained an exemplary academic record. I am really elated to tell that the department stands on the strength of experienced and well qualified faculty who are very dedicated to teaching and also involved in up-gradation of knowledge. Their experience will help to cultivate the future of our students.

With great demand in industry and great placement opportunities, the department stands tall and proud. Our students are not only academically sound and disciplined but they also organize various events like SPITECH, Social activities, Cultural activities to showcase their talents under non – technical, technical and cultural forums.

I invite you to the Electronics and Telecommunication Engineering Department if you are looking for an undergraduate program. My team is confident that your stint with K.C.E.S's C.O.E.M. will definitely make you outshine with a successful and accomplished career.

Program Educational Objectives (PEOs)

- PEO1 Learn Basic Sciences, mathematics and engineering fundamentals to provide solutions to the problems in the field of Electronics and Communication
- PEO2 Demonstrate competencies in the development of novel and cost-effective products to cater to the industrial needs.
- PEO3 Adapt rapidly changing industrial scenario due to new technology/concepts
- PEO4 Exhibit professional and human skills to relate engineering issues to broader social context.
- PEO5 Excel in higher studies and/or succeed in industry/technical profession exhibiting global competitiveness.


Program Outcomes (POs)

- PO 1 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2 **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3 **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4 **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO 5 **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO 6 **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO 7 **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

- PO 8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 9 **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
- PO 10 **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO 11 **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12 **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.

Program Specific Outcomes (PSOs)

- PSO 1 Design, simulate and develop novel and cost-effective electronics and/or communication systems to meet the industrial needs.
- PSO 2 Install, operate and maintain the electronics and telecommunication systems/subsystems to cater the industrial/social needs.
- PSO 3 Engage in innovations to meet realistic constraints like environmental, health, safety, etc of various stakeholders.


H. O. D.
Swapnil S. Patil

Course Outcome of Electronics & Telecommunication Engineering

S.E. (SEM-I)

Sr. No.	Subject Code	Subject Name	Course Outcomes
1)	BTBSC301	Engineering Mathematics-III	<p>On Successful completion of this course,the student will be able to:</p> <p>1. Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.</p> <p>2.Solve problems related to Fourier transform, Laplace transform and applications to Communication systems and Signal processing.</p> <p>3.Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.</p> <p>4.Perform vector differentiation and integration, analyze the vector fields and apply to Electromagnetic fields.</p> <p>5. Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.</p>
2)	BTEXC302	Analog Circuits	<p>On Successful completion of this course,the student will be able to:</p> <p>1. Describe the characteristics of IC and Op-Amp and identify the internal structure.</p> <p>2. Discuss and predict the component values of the linear and non-linear circuits of opamp.</p> <p>3. Apply Knowledge to interface digital circuits with analog components</p> <p>4. analyze and calculate the component values of frequency selective circuits and oscillators.</p> <p>5. Understand and apply the functionalities of PLL</p>
3)	BTEXC303	Electronic Devices & Circuits	<p>On Successful completion of this course,the student will be able to:</p> <p>1.Relate and verify parameters after exciting devices by any stated method.</p> <p>2. Implement circuit and test the performance.</p> <p>3.Analyze small signal model of FET and MOSFET.</p>

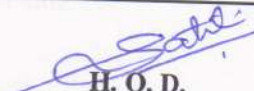
			4.Explain behavior of FET at low frequency.
			5. Design an adjustable voltage regulator circuits
4)	BTEXC304	Network Analysis	On Successful completion of this course,the student will be able to:
			1. Apply knowledge of mathematics to solve numerical based on network simplification and it will be used to analyze the same.
			2.Design passive filters and attenuators theoretically and practically. To apply knowledge for design of active filters as well as digital filters and even extend this to advance adaptive filters.
			3.Identify issues related to transmission of signals, analyze different RLC networks.
			4.Find technology recognition for the benefit of the society.
			5.Synthesize two port network functions
5)	BTEXC305	Digital Logic Design	On Successful completion of this course,the student will be able to:
			1.Use the basic logic gates and various reduction techniques of digital logic circuit in detail.
			2.Design combinational and sequential circuits.
			3.Design and implement hardware circuit to test performance and application.
			4.Describe the architecture and use of VHDL for basic operations and Simulate using simulation software.
			5.Classify different semiconductor memories.
6)	BTHM3401	Basic Human Rights	On Successful completion of this course,the student will be able to:
			1.Simply put, human rights education is all learning that develops the knowledge, skills, and values of human rights.
			2.Strengthen the respect for human rights and fundamental freedoms.
			3.Enable all persons to participate effectively in a free society.
			4.Learn about human rights principles, such as the universality, indivisibility, and interdependence of human rights.

5. Learn about regional, national, state, and local law that reinforces international human rights law.

S.E. (SEM-II)

Sr. No.	Subject Code	Subject Name	Course Outcomes
1)	BTEXC401	Electric Machine	On Successful completion of this course, the student will be able to:
			1. Formulate and then analyze the working of any electrical machine using mathematical model under loaded and unloaded conditions.
			2. Analyze the response of any electrical machine.
			3. Troubleshoot the operation of an electrical machine.
			4. Select a suitable measuring instrument for a given application.
			5. Estimate and correct deviations in measurements due to the influence of the instrument and due to the accuracy of the instrument.
2)	BTEXC402	Analog Communication Engineering	On Successful completion of this course, the student will be able to:
			1. Explain and identify the fundamental concepts and various components of analog communication systems.
			2. Restate the concepts of modulation and demodulation techniques.
			3. Design circuits to generate modulated and demodulated wave.
			4. Predict with various issues related to analog communication such as modulation, demodulation, transmitters and receivers and noise performance.
			5. Interpret the concepts of modulation and demodulation techniques of angle modulation (frequency and phase).
3)	BTEXC403	Microprocessor	On Successful completion of this course, the student will be able to:
			1. Apply knowledge of engineering in designing different case studies.
			2. Interface devices to Microprocessor
			3. Use of hardware and software tools.
			4. Optimize the Program

			5. Develop interfacing to real world devices.
4)	BTEXC404	Signals and Systems	<p>On Successful completion of this course, the student will be able to:</p> <p>1. Restate mathematical description and representation of continuous and discrete time signals and systems.</p> <p>2. Develop input output relationship for linear shift invariant system and explain the convolution operator for continuous and discrete time system.</p> <p>3. Explain and resolve the signals in frequency domain using Fourier series and Fourier transforms.</p> <p>4. Describe the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s- domain.</p> <p>5. Explain the basic concept of probability, random variables & random signals and develop the ability to find correlation, CDF, PDF and probability of a given event.</p>
5)	BTID405	Product Design Engineering	<p>On Successful completion of this course, the student will be able to:</p> <p>1. Create simple mechanical or other designs</p> <p>2. Create design documents for knowledge sharing</p> <p>3. Manage own work to meet design requirements</p> <p>4. Work effectively with colleagues.</p> <p>5. Gain understanding of the process Industries.</p>
6)	BTBSC406	Numerical Methods and Computer	<p>On Successful completion of this course, the student will be able to:</p> <p>1. Learn computational methods and errors.</p> <p>2. Solve algebraic and transcendental equations</p> <p>3. Explain the concept of interpolation, finite difference operators and their relations.</p> <p>4. Write computer programs for the numerical computational techniques.</p> <p>5. Learn Object Oriented Programming.</p>


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T.E. (SEM-I)

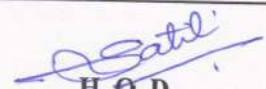
Sr. No.	Subject Code	Subject Name	Course Outcomes
1)	BTEXC501	Electromagnetic Field Theory	On Successful completion of this course,the student will be able to:
			1. Explain Maxwell's Equations.
			2.Characterize uniform plane wave
			3.Carryout impedance transformation on TL.
			4. Calculate reflection and transmission of waves at media interface
			5.Analysis of waveguide & Radiation Parameters of antenna
2)	BTEXC502	Control System Engineering	On Successful completion of this course,the student will be able to:
			1.Analyze closed & open loop systems , the modeling of LTI systems using transfer function and state-space representations.
			2.Explain time response analysis.
			3.Learn the concept of stability analysis.
			4.Explain frequency response analysis.
			5.Learn Controller design and state variable analysis.
3)	BTETC503	Computer Architecture	On Successful completion of this course,the student will be able to:
			1.Learn how computers work & its basic principles.
			2.Know processor organization
			3. Describe ALU design.
			4.Explain memory organization.
			5. Explain system organization & concept of parallel processing.
			On Successful completion of this course,the student will be able to:
4)	BTEXC504	Digital signal processing	1. Describe Fundamentals of DSP.
			2.Learn Discrete Fourier transform.
			3. Explain Z transform.
			4.Design IIR Filter.
			5. Design FIR Filter & learn Concept of Multirate DSP.
5)	BTEXC505	Microcontroller and its	On Successful completion of this course,the student will be able to:

		Applications	1. Apply knowledge of engineering in designing different case studies.
			2. Interface devices to Microcontroller
			3. Use of hardware and software tools.
			4. Optimize the Program
			5. Develop interfacing to real world devices.
6)	BTEXPE506C	Data Structure & Algorithms Using Java Programming	On Successful completion of this course, the student will be able to:
			1. Impart the basic concepts of data structures and algorithms.
			2. Explain concepts about searching and sorting techniques
			3. Describe how arrays, records, linked structures are represented in memory and use them in algorithms.
			4. Describe basic concepts about stacks, queues, lists trees and graphs.
			5. Write algorithms for solving problems with the help of fundamental data structures

T.E. (SEM-II)

Sr. No.	Subject Code	Subject Name	Course Outcomes
1)	BTETC601	Antennas and Wave Propagation	On Successful completion of this course, the student will be able to:
			1. Formulate the wave equation and solve it for uniform plane wave.
			2. Analyze the given wire antenna and its radiation characteristics.
			3. Identify the suitable antenna for a given communication system.
			4. Analyse Linear and Loop antennas.
			5. Learn antenna array and its applications.
2)	BTETC602	Computer Network & Cloud Computing	On Successful completion of this course, the student will be able to:
			1. Use Guided and Unguided Transmission media
			2. Set local area networks
			3. Explain the concepts of protocols & network interfaces.
			4. Explain the wireless networking concepts.
			5. Use Email, WWW.

3)	BTETC603	Digital Image Processing	On Successful completion of this course,the student will be able to:
			1.Learn Concept of Visual Information.
			2.Expalin Image Perception.
			3. Describe Image sampling and its transforms.
			4.Interpret image enhancement & restoration techniques.
5.Describe various applications in digital image processing system.			
4)	BTETPE604C	Power Electronics	On Successful completion of this course,the student will be able to:
			1.Review of Semiconductor Power Devices
			2. Design Controlled Rectifiers
			3.Describe Choppers & its types.
			4. Explain Switching Power Supplies
5.Explain Block diagram and configuration of UPS.			
5)	BTETOE605E	Python Programming	On Successful completion of this course,the student will be able to:
			1.Explain Basics of python programming.
			2.Describe Types, Operators and Expressions.
			3.Use of Data Structures Lists.
			4. Explain Default Arguments.
5.Object-Oriented Programming OOP in Python& Brief Tour of the Standard Library			
5)	BTHM606	Employability & Skill Development	On Successful completion of this course,the student will be able to:
			1.Have skills and preparedness for aptitude tests.
			2. Be equipped with essential communication skills.
			3. Master the presentation skill and be ready for facing interviews.
4. Build team and lead it for problem solving.			


H. O. D.
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B.E. (SEM-I)

Sr. No.	Subject Code	Subject Name	Course Outcomes
1)	BTETC701	Digital Communication	On Successful completion of this course,the student will be able to:
			1. Learn Digital Transmission of Analog Signal.
			2.Expalin Digital Multiplexing,
			3. Describe the Signal space representation
			4. Explain Passband Digital Transmission.
2)	BTETPE702	Fibre Optic Communication	On Successful completion of this course,the student will be able to:
			1. Describe the principles of fiber-optic communication, the components and the bandwidth advantages.
			2.Explain the properties of the optical fibers and optical components.
			3. Describe the operation of lasers, LEDs, and detectors.
			4. Analyze system performance of optical communication systems.
3)	BTETPE703	VLSI Design & Technology	On Successful completion of this course,the student will be able to:
			1.Explain VHDL Modeling.
			2. Explain PLD Architectures and applications.
			3.Design analog & digital CMOS circuits for specified applications
			4. analyze analog CMOS design.
4)	BTETPE704	Mechatronics	On Successful completion of this course,the student will be able to:
			1. Identify key elements of mechatronics system.
			2. Explain the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O.
			3.Interface Sensors, Actuators using appropriate DAQ micro-controller.
			4. Restate time and requency domain analysis of system model (for control application).

			5. Explain PID control implementation on real time systems.
5)	BTHM705	Financial Management	On Successful completion of this course, the student will be able to:
			1. Describe basic terminology used in finance and accounts
			2. Prepare & appraise Financial Statements and evaluate a company in the light of different measurement systems.
			3. Analyze the risk and return of alternative sources of financing.
			4. Estimate cash flows from a project, including operating, net working capital, and capital spending.
			5. Estimate the required return on projects of differing risk.

B.E. (SEM-II)

Sr. No.		Subject Name	Course Outcomes
1)	BTETPE801A	Introduction to Internet of Things	On Successful completion of this course, the student will be able to:
			1. Describe the application areas of IOT
			2. Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
			3. Explain building blocks of Internet of Things and characteristics.
			4. Analysis and evaluate the data received through sensors in IOT
			5. Analysis and evaluate protocols used in IOT
2)	BTETPE801B	Computer Vision and Image Processing	On Successful completion of this course, the student will be able to:
			1. Explain the basic theory and algorithms that are widely used in digital image processing.
			2. Describe image analysis algorithms.
			3. Explain current applications in the field of Image Processing.
			4. Develop hands-on experience in using computers to process images.
			5. Design & Synthesize Color image processing and its real world applications.


 H. O. D.
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Vision

To develop globally competent Mechanical Engineers with professional ethics.

Mission

- Imparting quality education blended with enduring core values and nurture creativity.
- Promote critical thinking for application of comprehensive engineering knowledge and skills to meet the global challenges.
- Creating effective interface with industries and community.
- Rejuvenate the best engineering practices meeting the goals of industrial and technological era through research activities.

1. Program Educational Objectives (PEO)

1. Ability to design, operate and maintain modern and advance machine tools and software.
2. Successful professional in public sector undertakings, industries and research.
3. Adequately lead the interdisciplinary and assorted group under different situations.
4. Capable to design, formulate industrial and environmental problems.

2) Program Outcomes (PO)

- 1) **Application of Basic Knowledge:** An ability to apply basic knowledge of science, mathematics and engineering fundamentals in the field of Mechanical Engineering.
- 2) **Problem Identification and Analysis:** An ability to identify, formulates, review research literature and analyze mechanical engineering problems using basics principles of science, mathematics and engineering.
- 3) **Propose Solutions to the problem:** An ability to design for complex mechanical engineering problems using basic design concepts, analyze and process to meet the desired needs with in realistic constraints such as manufacturability , durability, sustainability and economy with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations.

- 4) **Investigation of Complex problems using Scientific Methodology** An ability to design and conduct experiments using research-based knowledge and methods including design of experiments, analyze, interpret the data and results with valid conclusion.
- 5) **Applications of modern tools and techniques:** An ability to apply the modern tools and apply appropriate techniques to synthesize, model, design, analyze, verify and optimize to solve complex mechanical engineering problems within defined specification by using suitable modern tools to satisfy the needs of the society within realistic constraints such as social, economical, political, ethical, health, safety and manufacturing.
- 6) **Contribution in the welfare of the Society:** An ability to understand the impact of mechanical engineering solutions globally, in terms economic, societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7) **Taking care of Environment and sustainability:** An ability to understand the principles, commitment and practice to improve product sustainable development globally in mechanical engineering with minimal environmental effect.
- 8) **Ethical Practices:** An ability to understand and apply ethical principles and commitment to address professional ethical responsibilities of an engineer.
- 9) **Working as an individual as well as in team:** An ability to function efficiently as an individual and as a group member in a team in multidisciplinary activities
- 10) **Communication Skill:** An ability to communicate, comprehend and present effectively with engineering community and the society at large on complex engineering activities by receiving clear instructions for preparing effective reports and design documentation.
- 11) **Financial and management skills:** An ability to acquire and demonstrate the knowledge of contemporary issues related to finance and managerial skills to bring up entrepreneurs and entrepreneurship.
- 12) **Continuous Updating:** An ability to recognize and adapt to emerging field of application in engineering and technology by developing self-confidence for continuing education and lifelong learning process.

3. Programme Specific Outcomes (PSO)

A Mechanical engineering graduate of this institute should be able to,

- 1) design, simulate, analyze and optimize mechanical systems.
- 2) work in thermal, production, metallurgy, maintenance and design industries.
- 3) handle computer aided design and manufacturing.

Sr. No.	Course Code & Course Name	Course Outcome
CO1	Material Science and Metallurgy	discuss various crystal structures of materials
CO2		describe mechanical properties of materials and calculations of same using appropriate equations
CO3		evaluate phase diagrams of various materials
CO 5		Prepare samples of different materials for metallography
CO6		Recommend appropriate NDT technique for a given application
CO1		Fluid Mechanics
CO2	Calculate hydrostatic forces on the plane and curved surfaces and explain stability of floating bodies	
CO3	explain various types of flow.	
CO4	Apply Bernoulli's equation and Navier-Stokes equation to simple problems in fluid mechanics	
CO5	Describe xplain laminar and turbulent flows on flat plates and through pipes	
CO6	Explain and use dimensional analysis to simple problems in fluid mechanics	
CO7	summarize boundary layer, drag and lift	
CO1	Strength of Materials	
CO2		Recognize the stress state (tension, compression, bending, shear, etc.) and calculate the value of stress developed in the component in axial/eccentric static and impact load cases
CO3		Distinguish between uniaxial and multiaxial stress situation and calculate principal stresses, max. shear stress, their planes and max. normal and shear stresses on a given plane.
CO4		solve given beam for calculations of SF and BM
CO5		Calculate slope and deflection at a point on cantilever /simply supported beam using double integration, Macaulay's , Area-moment and superposition methods
CO6		Differentiate between beam and column and calculate critical load for a column using Euler's and Rankine's formulae
CO1		Engineering Thermodynamics

Branch : Mechanical

Semester: IV

Sr. No	Course Code and Course Name	COs
CO1	Theory of Machines-I	Define basic terminology of kinematics of mechanisms
CO2		Classify planar mechanisms and calculate its degree of freedom
CO3		Analyze kinematic analysis of a given mechanism using ICR and RV methods
CO4		Analyze kinematic analysis of a given mechanism analytically using vector or complex algebra method
CO5		Analyze kinematic analysis of slider crank mechanism using Klein's construction and analytical approach
CO1	Applied thermodynamics	Define the terms like calorific value of fuel, stoichiometric air-fuel ratio, excess air, equivalent evaporation, boiler efficiency, etc. And able to Calculate minimum air required for combustion of fuel
CO2		Classify various types of boiler, nozzle, steam turbine and condenser used in steam power plant
CO3		sketch P-v diagram for single-stage reciprocating air compressor, with and without clearance volume, and evaluate its performance also able to differentiate between reciprocating and rotary air compressors
CO1	Basic electrical drives and control	Classify types of electric drives systems based on nature of loads, control objectives, performance and reliability.
CO2		Identify the critical areas in application levels, and derive typical solutions
CO3		Select most suitable type and specification of motor drive combination for efficient conversion and control of electric power
CO4		describe various applications in industrial and domestic areas where use of electric drives are essential.
CO1	Manufacturing engineering-II	Calculate the cutting forces in orthogonal and oblique cutting
CO2		Determine the machinability of materials
CO3		describe the abrasive processes

CO4		Explain the different precision machining processes
CO5		Design jigs and fixtures for given application

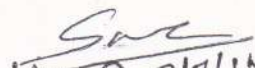
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Mech Dept.

Sr. No.	Course Code & Course Name	Course Outcome
CO1	Heat Transfer	explain the laws of heat transfer and deduce the general heat conduction equation and to explain it for 1-D steady state heat transfer in regular shape bodies
CO2		illustrate the critical radius of insulation, overall heat transfer coefficient, thermal conductivity and lumped heat transfer
CO3		Interpret the extended surfaces
CO 4		Illustrate the boundary layer concept, dimensional analysis, forced and free convection under different conditions
CO 5		summarize the Boiling heat transfer, mass transfer and determine the heat exchanger and examine the LMTD and NTU methods applied to engineering problems
CO6		explain the thermal radiation black body, emissivity and reflectivity and evaluation of view factor and radiation shields
CO1	I.C.Engines	Explain fundamentals of IC Engines
CO2		Categorize gas power cycles and vapour power cycles like Otto, Diesel, dual, Joule and Rankine cycles and derive expressions for the performance parameters like thermal efficiency, P_m
CO3		Classify Fuel-Air cycles and deviation of actual cycles from ideal cycles.
CO 4		Classify various types of IC engines. Sketch the cut section of typical diesel engine and label its components.
CO5		interpret Combustion in S.I. Engines, flame speed, ignition delay, normal and abnormal combustion, effect of engine variables on flame propagation and ignition delay, Combustion in C.I
		experiment with engine Testing and Performance of SI and CI Engines
CO1	Machine Design - I	formulate the problem by identifying customer need and convert into design specification
CO2		explain component behavior subjected to loads and identify failure criteria

CO3		categorize the stresses and strain induced in the component
CO 4		design the machine component using theories of failures
CO5		design the component for finite life and infinite life when subjected to fluctuating load
CO6		design the components like shaft, key, coupling, screw and spring
CO1	Theory of Machines – II	identify and select type of belt and rope drive for a particular application
CO2		create gear tooth geometry and select appropriate gears, gear trains
CO3		define governor and select/suggest an appropriate governor
CO 4		illustrate flywheels as per engine requirement
CO5		explain gyroscopic effects in ships, aeroplanes, and road vehicles.
CO6		Experiment with free and forced vibrations of single degree freedom systems
CO1	Industrial engineering and safety	interpret work study, toll and techniques of industrial engineering
CO2		summarize safety engineering, safety management
CO3		Paraphrase the material handling system

Sr. No.	Course Code & Course Name	Course Outcome
CO1	Metrology and quality control	Identify techniques to minimize the errors in measurement
CO2		Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts.
CO3		Choose limits for plug and ring gauges
CO 4		Explain methods of measurement in modern machineries
CO 5		Select quality control techniques and its applications
CO6		Plot quality control charts and suggest measures to improve the quality of product and reduce cost using Statistical tools.
CO1	Project and business management	Develop knowledge of project management and statistical tools used in it
CO2		Discover knowledge about capital cost and cost control
CO3		Discover knowledge about financial management techniques
CO 4		Compare CPM and PERT
CO5		Explain inventory management
CO1	Turbo Machinery	Classify turbines and jet engines
CO2		Draw velocity diagram for impulse and reaction turbine
CO3		Explain performance characteristics of jet engines
CO4		Calculate various factors like specific speed, efficiency
CO5		Describe hydraulic turbines
CO1	Machine Design - II	Define function of bearing and classify bearings.
CO3		Classify the friction clutches and brakes and decide the torque capacity and friction disk parameter
CO4		Select materials and configuration for machine element like gears, belts and chain
CO5		Design the elements like gears, belts and chain for given power rating

CO6		Design thickness of pressure vessel using thick and thin criteria
CO1	Numerical analysis and computational methods	describe the concept of error
CO2		Illustrate the concept of various Numerical Techniques
CO3		Choose the given Engineering problem using the suitable Numerical Technique
CO4		prepare the computer programming based on the Numerical Techniques


 H.O.D. 3/7/15
 Mech. Dept.

Sr. No.	Course Code & Course Name	Course Outcome
CO1	CAD/CAM	Create 3D model of increasing complexity and the assembly of parts to form a final design
CO2		Create Mechanism simulation
CO3		Describe the various curves and surfaces.
CO 4		Experiment on CNC machines and programming
CO 5		Explain robotics, robot anatomy and robot sensors
CO1	Refrigeration & air conditioning	Explain basic principles of psychrometry and applied psychometrics,
CO2		Describe refrigerants; vapor compression refrigeration and multi-stage vapor compression systems
CO3		Summarize the refrigeration system
CO4		describe the air conditioning system
CO5		Recognize components of vapor compression systems and other types of cooling systems.
CO6		
CO1	Automobile engineering-1	create anatomy of the automobile in general
CO2		explain location and importance of each part
CO3		Summarize the functioning of the engine and its accessories, gear box, clutch, brakes, steering, axles and wheels
CO4		Describe how the steering and the suspension systems operate.
CO5		Discover a strong base for understanding future developments in the automobile industry
CO1	Operation research	Identify and develop operational research models from the verbal description of the real system
CO2		explain the mathematical tools that are needed to solve optimisation problems
CO3		Use mathematical software to solve the proposed models.
CO4		Discover a report that describes the model and the solving technique, analyse the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.
CO1	Renewable energy sources	Differentiate between renewable and non-renewable energy
CO2		Describe working of solar collectors.
CO3		Explain various applications of solar energy
CO4		Summarize working of other renewable energies such as

		wind, biomass
CO5		explain the process of powder metallurgy and its applications

Branch : Mechanical

Semester: VIII

Sr. No	Course Code and Course Name	COs
CO1	Mechanical vibrations	Determine the natural frequency of transverse vibrations of the shaft and torsional vibrations of rotor systems
CO2		simplify the mathematical modeling of the two degrees of freedom systems and explain about the working principle of vibration absorber
CO3		Compute the natural frequencies and mode shapes of a multi degree of freedom system and explain the modal analysis of a vibrating system
CO4		Select the numerical methods to determine natural frequencies of the beam and rotor systems.
CO5		Describe the vibration measurement by using transducers and vibration exciter.
CO1	Finite element analysis & simulation techniques	explain steps of the FEA method;
CO2		develop the ability to generate the governing FE equations for systems governed by partial differential equation
CO3		describe the use of the basic finite elements for structural applications using truss, beam, frame, and plane elements; and
CO4		explain the application and use of the FE method for heat transfer problems
CO5		model multi-dimensional heat transfer problems using ANSYS
CO6		demonstrate the ability to create models for trusses, frames, plate structures, machine parts, and components using ANSYS general-purpose software
CO1	Power plant engineering	Discuss the energy resources and energy conversion methods available for the production of electric power in India
CO2		Determine the efficiency and output of a modern Rankine cycle steam power plant from given data, including superheat, reheat, regeneration, and irreversibilities.
CO3		Select the heat transfer tubes needed for condensers and feed water heaters.
CO4		Explain Hydro power and wind power turbines

CO5		Discuss the control methods of major pollutants emitted from fossil-fuel power plant
CO1	Automobile engineering-II	Identify the different parts of the automobile
CO2		Explain the working of various parts like engine, transmission, clutch, brakes
CO3		Describe the environmental implications of automobile emissions
CO4		Discover a strong base for understanding future developments in the automobile industry

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Mech. Dept.

CO2		explain laws of thermodynamics and apply these to simple thermal systems like balloon, piston-cylinder arrangement, compressor, pump, refrigerator, heat exchanger, etc.
CO3		paraphrase various types of processes like isothermal, adiabatic, etc. considering system with ideal gas and represent them on p-v and T-s planes.
CO4		Apply availability concept to non-flow and steady flow type systems
CO5		create phase diagram of pure substance (steam) on different thermodynamic planes like p-v, T-s, h-s, etc.
CO1	Manufacturing engineering-I	Classify castings processes & explain working principles and applications and list various defects in metal casting
CO2		Describe the various metal forming processes and their working principles and applications
CO3		Classify the basic joining processes and demonstrate principles of welding, brazing and soldering.
CO4		Experiment on centre lathe and its operations including plain, taper turning, work holding devices and cutting tool.
CO5		explain milling machines and operations, cutters and indexing for gear cutting.
CO6		Experiment on shaping, planing and drilling and related tools

First Year B. Tech. (All Branches)

Course Objectives

Course Outcomes

BTBS101 Engineering Mathematics-I

- CO1 Apply the matrix technique (Linear algebra) to find solutions of system of linear equations arising in many engineering problem.
- CO2 Demonstrate the concept partial derivatives and their applications to Maxima/ Minima , series expansion of multi valued functions.
- CO3 Compute Jacobian of functions of several variables and their applications to engineering problems.
- CO4 Identify and sketch of curves in various coordinate system.
- CO5 Evaluate multiple integrals and their applications to area and volume.

BTBS102/202 Engineering Physics

- CO1 Explain & apply the concept of types of Oscillation, Dielectric properties & ultrasonics.
- CO2 Explain & compare between Interference & Polarisation of light ,working Principle of Lasers & Fiber optics.
- CO3 Interpret, apply & demonstrate principle of motion of charged particles in EF&MF, BA in bridge Mass spectrograph & G M counter.
- CO4 Identify Types of crystals & crystal planes using Miller indices, Experimental approach.

BTES103/203 Engineering Graphics

- CO1 Use of drawing instruments effectively for drawing and dimensioning.
- CO2 Explain conventions and methods of engineering drawing.
- CO3 Apply concept of projections of points, lines, planes, solids and section of solids.
- CO4 Construct isometric and orthographic views of given objects.

BTHM104/204 Communication Skills

- CO1 Apply speaking and writing skills in professional as well as social situations.
- CO2 Overcome Mother Tongue Influence and demonstrate neutral accent while exercising English.
- CO3 Apply communication skills for Presentations, Group Discussion and interpersonal interactions.
- CO4 Apply grammar correctly during Speaking and Writing situations especially in context with Presentations, Public Speaking, Report writing and Business Correspondence.

BTES105/205 Energy and Environment Engineering

- CO1 Identify conventional ,non conventional energy sources.
- CO2 Know and discuss power consuming and power developing devices for effective utilization and power consumption
- CO3 Identify various sources of air, water pollution and its effects.
- CO4 Know and discuss noise, soil, thermal pollution and Identify solid, biomedical and hazardous waste.

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BTES106/206 Basic Civil and Mechanical Engineering

- CO1 Identify various Civil Engineering materials and choose suitable material among various options.
- CO2 Apply principles of surveying to solve engineering problem.
- CO3 Identify various Civil Engineering structural components and select appropriate structural system among various options.
- CO4 Explain and define various properties of basic thermodynamics, materials and manufacturing processes.
- CO5 Know and discuss the working principle of various power consuming and power developing devices.

BTBS201 Engineering Mathematics – II

- CO1 Discuss the need and use of complex variables to find roots, to separate complex quantities and to establish relation between circular and hyperbolic functions.
- CO2 Solve first and higher order differential equations and apply them as a mathematical modeling in electric and mechanical systems.
- CO3 Determine Fourier series representation of periodic functions over different intervals.
- CO4 Demonstrate the concept of vector differentiation and interpret the physical and geometrical meaning of gradient, divergence & curl in various engineering streams.
- CO5 Apply the principles of vector integration to transform line integral to surface integral, surface to volume integral & vice versa using Green's, Stoke's and Gauss divergence theorems.

BTBS102/202 Engineering Chemistry

- CO1 Demonstrate knowledge of chemistry in technical fields.
- CO2 Bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
- CO3 Develop the importance of water in industrial and domestic usage.
- CO4 Identify the concepts of Chemistry to lay the ground work for subsequent studies in various engineering fields.
- CO5 Examine a fuel and suggest alternative fuels.

BTES103/203 Engineering Mechanics

- CO1 Apply fundamental Laws of Engineering Mechanics.
- CO2 Apply Conditions of static equilibrium to analyze given force system.
- CO3 Compute Centre of gravity and Moment of Inertia of plane surfaces.
- CO4 Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion.
- CO5 Know and discuss relation between force and motion characteristics

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BTES104/204 Computer Programming in C

- C01** Gain a broad perspective about the uses of computers in engineering industry and C Programming.
- C02** Develop the basic concept of algorithm, algorithmic thinking and flowchart.
- C03** Apply the use of C programming language to implement various algorithms and develops the basic concepts and terminology of programming in general.
- C04** Use the more advanced features of the C language.
- C05** Identify tasks in which the numerical techniques learned are applicable and apply them to write programs and hence use computers effectively to solve the task.

BTES106/206 Basic Electrical and Electronics Engineering

- C01** Apply basic ideas and principles of electrical engineering.
- C02** Identify protection equipment and energy storage devices.
- C03** Differentiate electrical and electronics domains and explain the operation of diodes and transistors.
- C04** Acquire knowledge of digital electronics.
- C05** Design simple combinational and sequential logic circuits.

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K.C.E. SOCIETY'S COLLEGE OF ENGINEERING & I.T. JALGAON – 425001
DEPARTMENT OF COMPUTER ENGINEERING

Vision: To produce globally competent computer engineers.

Mission:

- To enhance the teaching learning process by adopting innovating practices.
- To inculcate moral and ethical values in students.
- To achieve holistic development of students through various co-curricular and extracurricular activities.
- To empower with creativity and innovations.

1. Program Educational Objectives

PEO1	To impart knowledge of mathematical principles for various programming concepts.
PEO2	To develop, operate and maintain information systems.
PEO3	To provide knowledge to build large-scale computer-based systems.
PEO4	To provide computer-based solutions to engineering problems.
PEO5	To adapt rapid changes in the field of information and communication technologies.
PEO6	To follow ethical practises in profession, society and environment issues.

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2. Program Outcomes

After the successful completion of this Program student will be able to:

PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO3	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.
PO4	Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions for complex problems.
PO5	Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	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.
PO7	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.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	Project Management and Finance: Demonstrate knowledge and understanding of

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	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.
PO12	Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

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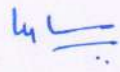
3. Program Specific Outcomes

PSO1	Problems Solutions with Tools and Technology: To provide specific solutions to problems in software domain with use of engineering tools and technology.
PSO2	Skills For Employment: To design and develop hardware and software skills based systems, evaluate and recognize potential risks and provide creative solutions
PSO3	Computer Hardware and Networking: To apply knowledge, techniques and professional skills for real time operation and maintenance of computer hardware and networking.

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Academic Dean


Academic Director


Principal

SE COMPUTER Semester III

Course Code and Title	Course Outcome	
BTBSC301 Engineering Mathematics III	CO1	Solve higher order linear differential equation using appropriate techniques for modelling and analysing electrical circuits.
	CO2	Solve problems related to Fourier transform, Laplace transform and applications to communication systems and signal processing.
	CO3	Obtain numerical solutions of differential equations using iterative methods used in modern scientific computing.
	CO4	Find vector differentiation and integration, analyze the vector fields and apply to Electromagnetic fields.
	CO5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.
BTCOC302 Discrete Mathematics	CO1	Explain sets, relations, functions, propositional logic and first order logic to solve problems.
	CO2	Model and analyze computational processes using analytic and combinatorial methods.
	CO3	Design real time application using graph theory and trees.
	CO4	Solve non trivial real life problems.
	CO5	Solve number theoretic problems using algebraic properties of groups, rings and fields.
BTCOC303 Data Structures	CO1	Explain different ways of data representation.
	CO2	Analyze the data structures allocation and its use in memory.
	CO3	Implement linear data structures.
	CO4	Design and implement various basic and advanced data structures.
	CO5	Develop application using data structures and improve their logical ability.
BTCOC304 Computer Architecture & Organization	CO1	Describe the structure, function and characteristics of computer systems.
	CO2	Classify the elements of modern instructions sets and their impact on processor design.
	CO3	Apply computer arithmetic formulae and solve problems.
	CO4	Analyze the memory organization and input output organization.

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	CO5	Design pipeline for consistent execution of instructions with minimum hazards.
BTCOC305 Digital Electronics & Microprocess ors	CO1	Develop a digital logic and apply it to solve real life problems.
	CO2	Design the basics of digital systems.
	CO3	Explain different types of number systems and their conversions.
	CO4	Design combinational and sequential circuits.
	CO5	Describe the working of a microprocessor and microcontroller.
BTHM3401 Basic Human Rights	CO1	Describe human rights law, relationships, legal values and authority of declarations, decisions and judgments.
	CO2	Explain the primary areas of human rights and law.
	CO3	Conceptualize the scope of human rights towards self, society and human beings.
BTCOL306 Python Programming	CO1	Explain Python programming language.
	CO2	Design Python applications.
	CO3	Demonstrate experience with Python program development environment.
	CO4	Develop well-documented programs in the Python language.
BTCOL307 HTML and JavaScript	CO1	Explain the basic tags and properties in HTML and CSS.
	CO2	Design website by implementing HTML and CSS.
	CO3	Use JavaScript to add dynamic content to pages.
BTCOL309 Data Structure Laboratory	CO1	Demonstrate various operations on stack and queue.
	CO2	Apply knowledge of data structures.
	CO3	Demonstrate fundamental algorithmic problems on searching and sorting.
BTCOL309 Digital Electronics & Microprocess or Lab	CO1	Design the Boolean expression and implement the logic gates.
	CO2	Apply boolean algebra and DeMorgan's theorem to simplify circuit designs.
	CO3	Design adders and sub tractors.
	CO4	Design basic combinational circuits and verify their functionalities.
	CO5	Design the sequential logic circuits.

SE COMPUTER Semester IV

BTCOC401	CO1	Analyze the algorithm and express its time and space complexities in asymptotic
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Design and Analysis of Algorithms		notations.
	CO2	Solve recurrence equations using iteration method, recurrence tree method and master's theorem.
	CO3	Design algorithms using divide and conquer strategy and compare it with dynamic programming.
	CO4	Design algorithms using back tracking, Branch Bound techniques and Greedy strategy for solving problems.
	CO5	Classify computational problems into P, NP, NP-Hard and NP-complete.
BTCOC402 Probability & Statistics	CO1	Develop probabilistic model for problems of algorithmic nature and compute its statistical parameters.
	CO2	Explain different methods of statistics for data analysis.
	CO3	Model various real life problems of operation research.
	CO4	Determine service time and waiting time in a queue.
	CO5	Describe elementary queuing concepts and apply in computer science.
BTCOE403 Operating System	CO1	Interpret the basic concepts of operating systems.
	CO2	Describe concepts of process, process scheduling and inter process communications.
	CO3	Illustrate importance of deadlock handling in design of operating system.
	CO4	Explain basic principle of memory management and its alternative methods.
	CO5	Analyze various file management and disk scheduling techniques.
BTCOE404 (B) Object Oriented Programming in C++	CO1	Apply various object oriented programming principles.
	CO2	Implement program using dynamic memory management techniques.
	CO3	Use standard template library in C++ language.
	CO4	Use files and streams in object oriented programming language.
	CO5	Apply different features of object oriented methodology like templates, exception handling.
BTID405 Product Design Engineering	CO1	Analyze simple mechanical or other designs.
	CO2	Prepare the documents about product knowledge sharing.
	CO3	Manage own work to meet design requirements.
	CO4	Demonstrate teamwork.

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	CO5	Apply ethical practices in product development.
BTHM3402 Soft Skills and Personality Development	CO1	Develop soft skills of the students through individual and group activities.
	CO2	Explain the importance, role and contents of soft skills through instruction.
	CO3	Conduct effective business correspondence and prepare business reports.
	CO4	Communicate through verbal communication and improve listening skills.
	CO5	Demonstrate inter-personal skills, team management skills, and leadership skills.
BTCOL407 Design and Analysis of Algorithms Lab	CO1	Implement divide and conquer methods and Greedy approach to design algorithms.
	CO2	Execute different methods of dynamic programming.
	CO3	Develop backtracking methods for solving problems.
	CO4	Implement different methods of Branch and Bound strategy.
BTCOL408 Introduction to Data Science with R	CO1	Illustrate data formats of R using R Studio.
	CO2	Analyze a data set in R and present findings using the appropriate R packages.
	CO3	Determine data attributes using ggplot2 and other R packages.
BTCOL409 Object Oriented Programming Laboratory	CO1	Articulate the principles of object-oriented problem solving and programming.
	CO2	Analyze programs to solve complicated problems using the concepts of object oriented programming.
	CO3	Design programs using object oriented programming concepts.
BTCOE410 Operating System Lab	CO1	Simulate Unix commands.
	CO2	Develop Java program to explain the working of multiple thread.
	CO3	Choose the best CPU scheduling algorithm for a given problem instance.
	CO4	Use various page replacement algorithms and evaluate their performance.
	CO5	Develop program that illustrate the concept of deadlock detection.

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TE COMPUTER Semester V

BTCOC501 Database Systems	CO1	Explain the features of database management systems and relational database.
	CO2	Design conceptual models of a database using ER modelling for real life applications.
	CO3	Build queries in relational algebra.
	CO4	Apply concepts of normalization to design an optimal database.
	CO5	Describe mechanisms for efficient retrieval of information from a database.
BTCOC502 Theory of Computations	CO1	Solve basic properties of formal languages and formal grammars.
	CO2	Solve basic properties of deterministic and nondeterministic finite automata.
	CO3	Analyze the relation between types of languages and types of finite automata.
	CO4	Design finite automata's for different regular expressions and languages.
	CO5	Design the context free languages and normalise context free grammar.
BTCOC503 Machine Learning	CO1	Interpret basic concepts and techniques of machine learning.
	CO2	Recognize the need of dimension reduction techniques.
	CO3	Elaborate supervised learning techniques like regression analysis and SVM.
	CO4	Apply the concepts of neural networks for learning non-linear functions.
	CO5	Describe various clustering techniques.
BTCOE504B Cyber Laws	CO1	Evaluate ongoing developments in law relating to information technologies.
	CO2	Incorporate approaches for incident analysis and response.
	CO3	Identify organizations, laws and regulations related to computer ethics, law and policy.
	CO4	Evaluate rules and theories in terms of internal coherence and practical outcomes.
	CO5	Evaluate contents in primary and secondary sources.
BTCOE505B Business Communication	CO1	Demonstrate professional and ethical attitude at the workplace.
	CO2	Apply effective communication and interpersonal skills.
	CO3	Build multidisciplinary approach towards all life tasks.
	CO4	Apply analytical and logical skills for problem solving.

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BTCOC506 Competitive Programming -I	CO1	Explain the algorithm design and coding skills.
	CO2	Solve the problems using different algorithms.
	CO3	Participate for online programming contests and hackathons.
BTCOL507 Database System Laboratory	CO1	Explain concepts of basic Structure Query Language (SQL).
	CO2	Demonstrate the principles of normalization.
	CO3	Apply advance SQL concepts like embedded SQL, procedures connectivity through JDBC.
	CO4	Create triggers, procedures and views.
	CO5	Develop physical design of a database system using database indexing techniques and storage techniques.
BTCOL508 Machine Learning Laboratory	CO1	Analyze linear regression.
	CO2	Develop R Script for logistic regression.
	CO3	Build R Script to implement random forest algorithm.
	CO4	Analyze working of clustering algorithms using R Script.
	CO5	Develop machine learning application using python.
TE COMPUTER Semester VI		
BTCOC601 Compiler Design	CO1	Describe the fundamentals of compiler.
	CO2	Explain the major phases of compilers.
	CO3	Paraphrase the role and necessity of runtime environment.
	CO4	Implement the programs for various phases.
	CO5	Design the system software using engineering tools.
BTCOC602 Computer Networks	CO1	Describe the functions of OSI and TCP/IP model in computer networks.
	CO2	Simulate network administration commands and use in network scenarios.
	CO3	Classify the routing protocols and assign the IP addresses for the network.
	CO4	Demonstrate the installation and configuration of network simulator.
BTCOE603 (C) Object-Oriented Analysis	CO1	Describe object oriented concepts and its use.
	CO2	Explain Unified Modelling Language (UML).
	CO3	Implement object oriented models using UML.

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Design	CO4	Describe object oriented methodology of software development.
	CO5	Explain the issues for implementing object oriented designs or models.
BTCOE604 (C) Internet of Things	CO1	Apply the concepts of Internet of Things (IOT).
	CO2	Apply Internet of Things (IOT) to different applications.
	CO3	Analyze protocols used in IOT.
	CO4	Design smart objects in IOT.
	CO5	Model basic IOT applications on embedded platform.
BTCOE605 (C) Consumer Behaviour	CO1	Apply knowledge of consumer behaviour for marketing.
	CO2	Explain factors influencing consumer behaviour.
	CO3	Demonstrate internal dynamics such as personality, perception, learning motivation and attitude to the consumer's choice.
	CO4	Use various research approaches for specific marketing situations.
	CO5	Prepare a research report on consumer behaviour issues within a specific context in a team.
BTCOC606 Competitive Programming -II	CO1	Explain the algorithm design and coding skills.
	CO2	Solve problems using different algorithms.
	CO3	Participate for online programming contests and hackathons.
BTCOL607 (A) Internet of Things Laboratory	CO1	Identify the requirements for the real world problems.
	CO2	Demonstrate software and hardware skills.
	CO3	Build the project using hardware and sensor requirements, coding, emulating and testing.
BTCOL608 Computer Networks Laboratory	CO1	Demonstrate network administration commands and their use in different network scenarios.
	CO2	Demonstrate the installation and configuration of network simulator.
	CO3	Classify the routing protocols and assign the IP addresses for the network.
	CO4	Analyze the contents the packet contents of different protocols.
	CO5	Develop an organization network using packet tracer.

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BE COMPUTER SEM-VII

BTCOC701 Software Engineering	CO1	Classify software engineering methods, practices and applications.
	CO2	Apply software models and techniques for innovative solutions.
	CO3	Demonstrate professional, ethical and social responsibilities in designing software.
	CO4	Describe process models and role of modelling in software development.
	CO5	Demonstrate leadership skills for quality software products.
BTCOE702 (A) Big Data Analytics	CO1	Explain the core concepts of big data.
	CO2	Identify common frameworks of big data Apache Spark, Hadoop, MapReduce.
	CO3	Explain large scale data storage technologies, NoSQL distributed databases.
	CO4	Analyze the use of Big Data Streaming Platforms.
	CO5	Apply Big Data Analytics in ML, deep learning and graph processing.
BTCOE703 Cloud Computing	CO1	Explain the core concepts of the cloud computing paradigm.
	CO2	Apply concepts in datacentres to calculate tradeoffs in power, efficiency and cost.
	CO3	Analyze various cloud programming models and apply them to solve problems.
	CO4	Identify resource management fundamentals.
	CO5	Analyze the components of open stack & Google cloud platform.
BTCOE704 (D) Design Thinking	CO1	Apply design process in business.
	CO2	Research the unique needs of a company around specific challenges.
	CO3	Build empathy for target audiences from different cultures.
	CO4	Develop and test innovative ideas through a rapid iteration cycle.
	CO5	Create physical prototypes and a visual representation of an idea.
BTCOL705 Full Stack Development (LAMP/MEAN)	CO1	Develop web based application using client side and server side web technologies.
	CO2	Develop web based application using Scripting Languages.
	CO3	Apply solution to problems using method, techniques and frameworks.
BTCOL706 System Administration	CO1	Demonstrate principles, practices and goals of system administration.
	CO2	Perform network services installation and management.
	CO3	Solve the systems problems using troubleshooting.
	CO4	Demonstrate an understanding of configuration and management of data storage.

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BTCOL707 (A) Big Data Analytics Lab	CO1	Install Hadoop in Pseudo distributed and Fully distributed operating modes.
	CO2	Perform file management tasks in Hadoop and use Map Reduce API.
	CO3	Apply the Map Reduce paradigm.
	CO4	Install and run Hbase and Apache cluster.
	CO5	Install, configure and deploy Apache Spark cluster.
BTCOL708 (A) Laboratory Cloud Computing Laboratory	CO1	Define cloud computing, cloud services and deployment models
	CO2	Examine importance of virtualization along with their technologies.
	CO3	Describe the key components of Amazon web Service.
	CO4	Develop backup strategies for cloud data.
BE COMPUTER SEM-VIII		
BTCOE801 (A): Deep Learning	CO1	Explain the deep learning concepts and optimization techniques.
	CO2	Discuss the different neural networks methods.
	CO3	Distinguish types of convolutional neural network architectures.
	CO4	Implement the supervised tasks of object detection and image retrieval.
	CO5	Implement deep learning algorithms to solve real-world problems.
BTCOE802 (A): Introduction to Industry 4.0 and Industrial Internet of Things	CO1	Define Industrial Internet of Things (IIOT) Layers and cyber security in IIOT.
	CO2	Discuss IIOT sensing and communications methods.
	CO3	Apply security and fog computing in IIOT.
	CO4	Describe the importance of big data analytics in IIOT.
	CO5	Develop the applications using Industrial IOT.

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Academic Dean

Academic Director

Principal



**KHANDESH COLLEGE EDUCATION SOCIETY'S
COLLEGE OF ENGINEERING & I.T, JALGAON**

(Approved by AICTE, New Delhi, Affiliated to DBATU, Lonere; KBCNMU, Jalgaon
MSBTE, Mumbai & Recognised by Govt. of Maharashtra)

An ISO 9001:2008 Institution and NAAC ACCREDITED GRADE - 'B' (CGPA - 2.53)

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Department of Electrical Engineering

Vision

Ignite students to Accomplish Universal Technical and Human Skills in the Field of Electrical Engineering

Mission

- M1:** To set academic excellence by developing state of art infrastructural facilities.
- M2:** To furnish students with technical and interdisciplinary competencies by integrating industries, alumni and other instituting.
- M3:** To create a passion for learning and promote innovation.

Program Educational Objectives (PEOs)

The graduate of this engineering college seeking bachelor's degree in Electrical Engineering should -

- PEO1 practice electrical engineering in power sector industry, public sector undertaking or as an entrepreneur for successful professional career.
- PEO2 be able to solve industrial and social problems using existing system and/or developing new system.
- PEO3 excel in higher studies and research.
- PEO4 exhibit skills to work as a team member and/ or team leader.
- PEO5 learn and apply basic sciences, mathematic and engineering fundamentals in the field.

Program Outcomes (POs)

- PO1 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO2 **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.
- PO3 **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.
- PO4 **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.
- PO5 **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.
- PO6 **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.
- PO7 **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.
- PO8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 **Individual and team work:** Function effectively as an individual, and as a

member or leader in diverse teams, and in multidisciplinary settings

PO10 **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.

PO11 **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.

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.

Program Specific Outcomes (PSOs)

PSO1 Pursue research in advanced areas of Electrical Engineering to offer ethical engineering services to the society.

PSO2 Demonstrate proficiency in use of software and hardware required to practice electrical profession.

PSO3 Operate and maintain electrical machines, switchgears, power electronics and electrical systems.

H. O. D.

Kalpesh M. Mahajan

KCES'S COLLEGE OF ENGINEERING & MANAGEMENT, JALGAON

ELECTRICAL DEPARTMENT BE(2020-21)

Sem	Course Code	Subject	Course Outcomes
VII	BTEEC 701	POWER SYSTEM OPERATION & CONTROL	On successful completion of this course student will be able to: 1. develop mathematical models of power system components 2. analyze synchronous machine & excitation system modelling. 3. illustrate the performance of systems under different conditions. 4. formulate the power flow problems using different techniques.
	BTEEC 702	HIGH VOLTAGE ENGINEERING	On successful completion of this course student will be able to: 1. describe the engineering aspects of EHV AC transmission system. 2. analyze various transients in transmission line 3. design transient protection for power system. 4. choose the testing methods for apparatus in power system. 5. derive the voltage control principles. 6. perform a dynamic response of high voltage measurement systems.
	BTEEC703	ELECTRICAL DRIVE	On successful completion of this course student will be able to: 1. analyze the dynamics of electrical drives system. 2. use control techniques for speed control of AC and DC motors. 3. select the appropriate drive according to the applications. 4. use of recent technology of AC and DC drives.
	BTEEE704A	SPECIAL PURPOSE ELECTRICAL MACHINES	On successful completion of this course student will be able to: 1. determine the working of synchronous machines. 2. illustrate principle of operation & construction of machines. 3. design power converter for switched reluctance motor. 4. determine the control aspect of special electrical machines. 5. recite the features of motors for traction applications.
	BTEEE705B	ENERGY AUDIT & CONSERVATION (ELECTIVE X)	On successful completion of this course student will be able to: 1. discuss Global Environmental Issues. 2. estimate Energy efficiency opportunities. 3. describe Energy Conservation his/her own words. 4. identify methods for energy management. 5. analyze the energy data and electric tariff for implementation of DSM.
	BTEEL706	POWER SYSTEM OPERATION & CONTROL	On successful completion of this course student will be able to: 1. develop a program for economic dispatch in power systems. 2. analyze equal area criteria. 3. demonstrate the Excitation System for Syn. machine using MATLAB. 4. determine power angle curve using MATLAB. 5. derive single area load frequency control using MATLAB.
	BTEEL707	HIGH VOLTAGE ENGINEERING LAB	On successful completion of this course student will be able to: 1. explain importance of insulation providing for the high voltage equipment. 2. choose methods of breakdown mechanisms in application of high voltages. 3. aware of generation & measurement of high voltage and currents. 4. build the knowledge of insulation co-ordination. 5. create information on testing of electrical apparatus.

	BTEEL 708	ELECTRICAL DRIVE LAB	On successful completion of this course student will be able to: 1. identify relevant information to supplement to the Electric Drives. 2. use standard methods to determine accurate simulation parameters. 3. estimate constraints, uncertainties and risks of the system. 4. esign systems with electric drives
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KCES'S COLLEGE OF ENGINEERING & MANAGEMENT, JALGAON

ELECTRICAL DEPARTMENT TE(2019-20)

Sem	Course Code	Subject	Course Outcomes
	BTEEC 501:	ELECTRICAL MACHINE-II	<p>On successful completion of this course student will be able to:</p> <ol style="list-style-type: none"> 1. define methods of speed control of AC and DC motor. 2. perform testing on AC and DC motor. 3. determine operating characteristics of AC and DC machines. 4. simplify simple equivalent circuit for the machine. 5. determine the construction and principle of operation of different kinds of rotating AC machines.
	BTEEC 502:	POWER SYSTEM-II	<p>On successful completion of this course student will be able to:</p> <ol style="list-style-type: none"> 1. analyse sending end voltage, receiving end voltage. 2. determine transmission line efficiency and regulation. 3. develop the positive, negative and zero sequence network for a given system. 4. identify the common causes of faults in power system. 5. simplify the power flow problems using load flow methods
	BTEEC 503-	MICROPROCESSOR AND MICRO CONTROLLER	<p>On successful completion of this course student will be able to:</p> <ol style="list-style-type: none"> 1. paraphrase the architecture of 8085 and 8051. 2. describe features of 8085 and 8051. 3. develop program for basic applications. 4. design electrical circuit on the Microprocessor I/O ports. 5. discuss the pin configuration and memory organisation of microprocessor and microcontroller .
v	BTHM 504:	VALUE EDUCATION, HUMAN RIGHTS AND LEGISLATIVE PROCEDURES	<p>On successful completion of this course student will be able to:</p> <ol style="list-style-type: none"> 1. define moral values of the society 2. identify a sense of right and wrong based on the moral philosophy. 3. discuss of the problems of modern society . 4. demonstrate professional ethics and ethical practices in profession. 5. categorize environmental values.

BTEEE 505 ELECTIV E- IV: C.	TESTING AND MAINTENANCE OF ELECTRICAL EQUIPMENT	On successful completion of this course student will be able to: 1. analyze testing of electrical equipment by various methods as per ISI standards. 2. determine the faults in equipment during manufacturing 3. use modern techniques for detecting faults 4. develop maintenance schedule of different equipment.
BTEEE 506: ELECTIV E-V. A.	ELECTRICAL MOBILITY	On successful completion of this course student will be able to: 1. use the concept of electric mobility for developing an electric vehicle.. 2. Programme is aimed at the future application fields of electric mobility and energy storage systems. 3. demonstrate different configurations of electric vehicles. 4. model the power electronics converter in electric and hybrid vehicles. 5. summarize benefits of electric vehicle for environment over to IC engine cars.
BTEEL 507.	ELECTRICAL MACHINE-II LAB	On successful completion of this course student will be able to: 1. describe the operating characteristics of different machines. 2. apply concept of speed control of different machines. 3. determine the load sharing of transformers in the power engineering. 4. formulate the parameters of both transformer and induction motor.
BTEEL 508.	POWER SYSTEM-II LAB	On successful completion of this course student will be able to: 1. analyse different types of faults in power systems. 2. calculate fault occurring in transmission line. 3. design the DC load flow analysis for estimation of different power systems. 4. illustrate stability problems in multi machine power system.

BTEEL 509.	MICROPROCESSOR AND MICRO CONTROLLER LAB	On successful completion of this course student will be able to: 1. develop program for basic applications. 2. design programs on 8085 microprocessor. 3. build the interfacing circuits with 8085. 4. explain the concepts related to I/O and memory interfacing.
BTEEC 601.	CONTROL SYSTEM	On successful completion of this course student will be able to: 1. describe the behaviour of nonlinear control system. 2. design PID controller. 3. analyze state variable technique. 4. analyze suitable control system for engineering application.
BTEEC 602	PRINCIPLES OF ELECTRICAL MACHINE DESIGN	On successful completion of this course student will be able to: 1. illustrate the principle of electric machine design. 2. design different components of electric machine. 3. describe concepts of synchronous machines. 4. recite faraday's law of electromagnetic induction.
BTEEC 603	POWER ELECTRONICS	On successful completion of this course student will be able to: 1. choose fundamental concepts and techniques. 2. develop skills to build troubleshoot in power electronics circuits. 3. classify the power semiconductor devices. 4. recognize the role power electronics in the improvement of efficiency. 5. select suitable power converters in industry grade apparatus.
BTEEE60 4 : Elective- VI: A.	INDUSTRIAL AUTOMATION AND CONTROL	On successful completion of this course student will be able to: 1. explain operation of different industrial measurement systems. 2. develop new trends in industrial process control. 3. apply hydraulic solutions for designing automated systems. 4. implement electro-pneumatic/hydraulic solutions for automated systems. 5. apply PLC programming and implement it on PLC kits

VI

BTEEE 605 ELECTIV E-VII A.	SWITCH GEAR AND PROTECTION	On successful completion of this course student will be able to: 1. explain the working of different types of switchgear equipments. 2. select methods of over voltage protection. 3. use of switchgear equipments in various application. 4. derive protection schemes used in power system operation 5. develop an ability and skill to design the feasible protection systems.
BTEEOE 606 ELECTIV E- VIII. B.	PROJECT MANAGEMENT	On successful completion of this course student will be able to: 1. use concepts of project management. 2. develop a project plan. 3. implement the project strategy. 4. analyze post project affects.
BTEEL 607.	CONTROL SYSTEM LAB	On successful completion of this course student will be able to: 1. derive the time and frequency response of the system. 2. model of dynamical systems. 3. determine the stability of the system using MATLAB. 4. verify the control technique using MATLAB.
BTEEL 608.	PRINCIPLES OF ELECTRICAL MACHINE DESIGN LAB	On successful completion of this course student will be able to: 1. describe proper material for the design of an electrical machine. 2. illustrate Stator core & stator winding of an Induction motor. 3. calculate load current & other performance characteristics. 4. calculate the performance characteristics of Transformer.
BTEEL 609.	POWER ELECTRONICS LAB	On successful completion of this course student will be able to: 1. design the power electronics circuits. 2. evaluate characteristics of power semiconductor devices. 3. choose the testing strategies of Power devices. 4. evaluate performance characteristics power electronics circuits. 5. analyze their operation under different loading conditions

KCES'S COLLEGE OF ENGINEERING & MANAGEMENT, JALGAON

ELECTRICAL DEPARTMENT SE(2018-19)

Sem	Course Code	Subject	Course Outcomes
III	BTBSC 301.	ENGINEERING MATHEMATICS III	On successful completion of this course; students will be able to 1. solve differential equations of the engineering problems. 2. solve analytic function of a complex variable. 3. describe various integration solutions. 4. illustrate mathematical solution of social problems
	BTEEC 302.	NETWORK ANALYSIS & SYNTHESIS	On successful completion of this course; students will be able to 1. describe basic components of electric network. 2. design network equations. 3. apply laplace theorem for electric network analyses 4. evaluate two-port network parameters. 5. design attenuators and equalizers
	BTEEC 303.	FLUID MECHANICS AND THERMAL ENGINEERING.	On successful completion of this course; students will be able to 1. describe properties of fluid and hydraulic measurement 2. determine basic concepts of IC engines. 3. solve fluid problems, 4. illustrate of thermo-fluid problem 5. evaluate and create an thermal system.
	BTEEC 304	MEASUREMENT AND INSTRUMENTATIO N	On successful completion of this course; students will be able to 1. apply philosophy of measurement. 2. explain methods of analog and digital measurement. 3. perform transducer principle operation characteristic. 4. apply modern instruments for process control of automation. 5. select appropriate instrument for measurement.
	BTHM 3401	BASIC HUMAN RIGHTS	On successful completion of this course; students will be able to 1. describe the historical growth of the idea of human rights 2. demonstrate an awareness of the international human rights. 3. describe the importance of the Human Rights Act 1998. 4. explain concepts of basic human rights.
	BTHM 306.	ENGINEERING ECONOMICS	On successful completion of this course; students will be able to 1. outline the concept of time value of money. 2. determine load demand. 3. describe production and factors of production. 4. categorize different concepts about market. 5. analyze economic development. 6. use of economic laws.

BTEEE 305A .	ELECTRICAL ENGINEERING MATERIALS.	On successful completion of this course; students will be able to 1. analyze various crystal structure for different applications. 2. describe the importance of magnetic properties and superconductivity. 3. explain and classify behavior of conductive and semiconductive materials. 4. explain the dielectric properties of insulators. 5. define the properties of nano materials.
BTEEL 307.	NETWORK ANALYSIS AND SYNTHESIS LABORATORY	On successful completion of this course; students will be able to 1. describe principles of network theorem. 2. analyze mathematical results with experimental results of network theorems. 3. apply circuit reduction techniques. 4. simplify the complicated circuit.
BTEEL 308.	MEASUREMENTS AND INSTRUMENTATIO N LABORATORY	On successful completion of this course student will be able to: 1. determine Voltage, Current, Power factor , Power, Energy. 2. differentiate PMMC and Moving Iron type Instruments. 3. perform the Bourdon tube pressure gauge. 4. calculate value of resistance using AC Bridges.
BTEEM 309.	ELECTRICAL WORKSHOP/ MINI PROJECT	On successful completion of this course student will be able to: 1. verifies basic scientific principles. 2. design Small electronic project based on hardware & software. 3. build core hardware projects. 4. model the projects as an individual or in a team
BTEEC 401.	ELECTRICAL MACHINES – I	On successful completion of this course student will be able to: 1. analyze operation of DC and AC machines. 2. solve the performance characteristics of machines. 3. illustrate performance of the equivalent circuit. 4. Perform parallel operation, tap-changing of three phase transformers. 5. Identify possible applications of different machines.
BTEEC 402 :	POWER SYSTEM-I	On successful completion of this course student will be able to: 1. design basic operation of power system components . 2. model the layout of generation and distribution power plant. 3. analyze different major equipments used in power system. 4. formulate effects of problems arise in transmission lines. 5. predict the effect of wind & ice coating on transmission line.
BTEEC 403	ELECTRICAL INSTALLATION AND ESTIMATION	On successful completion of this course student will be able to: 1. prepare estimate of domestic and commercial electrical installations. 2. summarize the scheme of illumination system. 3. describe methods of wiring systems. 4. demonstrate estimate of overhead & underground distribution lines 5. label the costing of electrical installation of power system.

IV

BTEEC 404.	NUMERICAL METHODS AND PROGRAMMING	On successful completion of this course student will be able to: 1. formulate MATLAB programming. 2. explain Newton-Raphson method in single variable. 3. develop computer program for linear and nonlinear equations. 4. evaluate program for numerical differentiation and integration. 5. describe MATLAB function in Fixed-point iteration in single variable.
	PRODUCT DESIGN ENGINEERING	On successful completion of this course student will be able to: 1. create simple mechanical or other designs 2. develop design documents for knowledge sharing 3. describe product design steps 4. discuss & work effectively with colleagues
BTEEE 405B.	ANALOG AND DIGITAL ELECTRONICS	On successful completion of this course student will be able to: 1. select proper instruments & set up testing strategies 2. evaluate performance characteristics of electronic circuit. 3. analyze operation of different digital components. 4. recall types of wiring and instruments connections. 5. discuss technical, economical, safety issues.
BTEEOE 407B.	INTRODUCTION TO NON- CONVENTIONAL ENERGY SOURCES	On successful completion of this course student will be able to: 1. demonstrate the generation of electricity from various sources of energy. 2. analyze harnessing of solar energy. 3. illustrate harnessing of wind energy 4. explain the operational methods of ocean energy utilization. 5. acquire the knowledge on Geothermal energy.
BTEEL 408.	ELECTRICAL MACHINE-I LABORATORY	On successful completion of this course student will be able to: 1. describe construction, principle operation of electrical Machine. 2. apply energy conversion principles to machines. 3. select machine for specific applications. 4. apply testing on the machine for performance calculation. 5. acquire knowledge about characteristics of machines.
BTEEL 409.	POWER SYSTEM-I LABORATORY	On successful completion of this course student will be able to: 1. explain basic operation of power system components . 2. model the layout of generation and distribution power plant. 3. analyze different major equipments used in power system. 4. identify effects of problems arise in transmission lines. 5. summarize the effect of wind & ice coating on transmission

BTEEL 410.	NUMERICAL METHODS AND PROGRAMMING LABORATORY	<p>On successful completion of this course student will be able to:</p> <ol style="list-style-type: none"> 1. determine basic knowledge in Finding the rank of matrices. 2. solving algebraic and transcendental equations by numerical methods. 3. verify different types of mathematical methods. 4. implement simulation model. 5. develop computer program for matrix. 6. develop program for scan conversion of a straight line, circle, ellipse, rectangle, circle, arc.
BTEEL 411.	ANALOG AND DIGITAL ELECTRONICS LABORATORY	<ol style="list-style-type: none"> 1. compare analog and digital electronics systems. 2. analyze operation different electronic circuits. 3. evaluate possible causes of discrepancy in practical experiment. 4. design simple logic circuits. 5. identify the various digital ICs and understand their


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KCES'S COLLEGE OF ENGINEERING & MANAGEMENT, JALGAON

ELECTRICAL DEPARTMENT M.TECH(2017-18)

Sem	Course Code	Subject	Course Outcomes
	MTEPS 101	POWER SYSTEM MODELING	On successful completion of this course student will be able to: 1. design power system component modeling. 2. analyse modeling of synchronous machine. 3. solve on simulation models. 4. describe configuration and functioning of synchronous machine excitation system.
	MTEPS 102	RENEWABLE ENERGY SYSTEM	On successful completion of this course student will be able to: 1. determine current energy scenario and their impact on environment. 2. predict the process of power generation by renewable energy sources. 3. solve configuration of various renewable energy systems 4. recite various forms of energy storage and their importance.
	MTEPS 103	ADVANCED POWER ELECTRONICS	On successful completion of this course student will be able to: 1.determine the behaviour of power semiconductor devices. 2.analyze operation of various power converters. 3.slove advance power conversion techniques. 4.Apply power conversion technology for exploring RES. 5.design and test power electronic circuits in the laboratory.
	MTEPS 104-1	HIGH VOLTAGE POWER TRANSMISSION	On successful completion of this course student will be able to: 1.design engineering aspects of EHV AC transmission system. 2.analyze various transients in transmission line. 3.design transient protection for power system. 4.explain voltage control principles.
	MTEPS 105-1	POWER SYSTEM PLANNING AND RELIABILITY	On successful completion of this course student will be able to: 1.formulate load forecasting and planning techniques. 2.determine secure and reliable networks. 3.classify generation, transmission, and distribution system. 4.solve on simulation models. 5.describe configuration and functioning of synchronous machine system.
	MTEPS 106	COMMUNICATION SKILLS	On successful completion of this course student will be able to: 1. apply communication skills across settings, purposes, and audiences. 2. identify and control anxiety while delivering speech. 3. apply control the tone while speaking. 4. develop a plan to deliver the well-argued presentations.
	MTEPS 107	P.G. LABORATORY -I	On successful completion of this course student will be able to: 1. design the practical circuits for different applications. 2. model different electrical and electronics systems 3. analyze the circuit performance for comparative study. 4. describe load flow solution his/her own words

	MTME 201	POWER SYSTEM DYNAMICS AND CONTROL	On successful completion of this course student will be able to: 1. formulate various models of Synchronous machine. 2. analyze Synchronous machine performance for various conditions. 3. determine philosophy of power system stabilizer and their applications. 4. interpret small signal stability analysis with and without controller. 5. define various small signal stability enhancement techniques.
	MTEPS 202:	ADVANCED POWER SYSTEM PROTECTION	On successful completion of this course student will be able to: 1. summarize philosophy of various relays used in protection. 2. predict basic principle of digital relaying. 3. describe the concept of protection. 4. perform practical on MATLAB software.
	MTEPS 203	DISTRIBUTED GENERATION AND MICROGRID	On successful completion of this course student will be able to: 1. describe exploration of renewable energy sources. 2. analyse philosophy of distributed generation. 3. solve various issues of DG with grid integration. 4. predict the concept of micro grid and various power quality issues.
	MTEPS 204	A APPLICATION OF POWER ELECTRONICS TO POWER SYSTEMS	On successful completion of this course student will be able to: 1. restate the concept of FACTs. 2. solve the problems occurring power transmission 3. analyse the FACT controllers. 4. predict the active filtering techniques in mitigation of harmonic distortion.
	MTEPS 205	ENERGY MANAGEMENT AND AUDITING	On successful completion of this course student will be able to: 1. analyse principles of energy audit and energy management. 2. apply load management technique. 3. describe present state of energy security and its importance. 4. solve use of various energy metering tools in energy management. 5. identify the basic principles and methodologies adopted in energy audit of utility.
	MTEPS 206	SEMINAR-I	On successful completion of this course student will be able to: 1. develops writing technical report writing skill. 2. demonstrate presentation skill. 3. judge when to speak and how much to say, speak clearly and audibly. 4. demonstrate that they have paid close attention to what others say.

	MTEPS 207	P G LABORATORY II / MINI PROJECT	On successful completion of this course student will be able to: 1. model the different electrical and electronics systems practically 2. describe the circuit performance for comparative study 3. design the practical circuits for applications. 4. determine the computing requirements appropriate to its solution.
	MTEPS 301	PROJECT MANAGEMENT AND INTELLECTUAL PROPERTY RIGHTS	On successful completion of this course student will be able to: 1. demonstrate fundamental terms such as copy-rights ,Patents. 2. interpret and follow Laws to register own project research. 3. determine the enhance capability to do economic analysis of commercial strategies. 4. develop awareness at all levels of society.
	MTEPS 302	PROJECT PHASE-I	On successful completion of this course student will be able to: 1. identify suitable area of work and conduct detailed literature survey. 2. formulate the problem statement. 3. define aim and objectives of with probable solution methodology. 4. analyze the iterative processes of a project correctly.
	MTEPS 401	PROJECT PHASE-II	On successful completion of this course student will be able to: 1. design and test the developed power system. 2. analyze the performance of the power system. 3. create the technical report. 4. present & publish research paper. 5. describe power system solution his/her own words 6. recite power system solution.

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PO'S & CO'S

**KCES's College of Engineering and Information Technology
DEPARTMENT OF MANAGEMENT**

MBA Master of Business Administration

MBA Program Educational Objectives

PEO	Keywords	PEO Statements
PEO 1	Practical Knowledge	Practice the management theories and concepts
PEO2	Decision Making Skills	Acquire skills to handle decision making
PEO 3	Values and Ethics	Imbibe values and ethics in an individual for an organizational conduct
PEO 4	Leadership Skills	Develop leadership qualities and handle managerial environment

MBA Program Outcomes

On successful completion of program, student shall be able to:

- PO1. **Apply** knowledge of management theories and practices to solve business problems.
- PO2. **Analyze** and communicate global, economic, legal, and ethical aspects of business.
- PO3. **Illustrate** analytical and critical thinking abilities for data-based decision making.
- PO4. **Develop** value-based leadership ability.

MBA Program Specific Outcomes

MBA Program Specific Outcomes A - Financial Management

- PSO1 **Apply** the concepts and theories of financial management in practical situations
- PSO2 **Demonstrate** financial decision-making abilities in order to maximize the value of the firm.
- PSO3 **Analyze** the environment in which the business operates and evaluate the alternatives of the financial risk management
- PSO4 **Develop** the financial strategies to enhance the firm's competitive strengths.

MBA Program Specific Outcomes B - Marketing Management

- PSO1. **Apply** the concepts/theories of marketing management to solve marketing related problems.
- PSO2. **Illustrate** analytical and critical thinking abilities to enhance decision making in marketing.
- PSO3. **Analyze** the environment in which the business operates and evaluate the alternatives of the marketing management.
- PSO4. **Predict** consumer behavior and **build** marketing strategies to maximize the sales of the firm.

MBA Program Specific Outcomes C - Human Resource Management

- PSO1. **Apply** the concepts/theories of human resource management to **solve** business related problems.
- PSO2. **Illustrate** teamwork and leadership in organizations to accomplish organizational goals and objectives
- PSO3. **Use** the knowledge of various labor laws to take vital human resource related decisions.
- PSO4. **Analyze** the environment in which business operates and **formulate** various human resource policies.

MBA Program Specific Outcomes D - Production and Operations Management

- PSO1. **Apply** the concepts/theories of production and operations management to solve production related problems.
- PSO2. **Illustrate** analytical and critical thinking abilities to enhance decision making in production and operations.
- PSO3. **Analyze** the changing technological environment in which business operates and **build** the strategies to make the firm competitive.
- PSO4. **Modify** the quality of production to accomplish organizational goals and objectives.

MBA Program Specific Outcomes E - International Business Management

- PSO1 **Apply** concepts/theories of International Business management to solve business related problems.
- PSO2 **Illustrate** analytical and critical thinking abilities to enhance decision making in international business management.
- PSO3 **Analyze** the changing international environment in which business operates and **evaluate** the alternatives.
- PSO4 **Develop** the strategies to cope up with rapidly changing international business environment.

MBA Program Specific Outcomes F - Agro Business Management

- PSO1. **Apply** the concepts/theories of management to solve agro business related problems.
- PSO2. **Analyze** various government promotion policies related to agriculture business.
- PSO3. **Illustrate** analytical and critical thinking abilities to enhance decision making in agro business management.
- PSO4. **Develop** entrepreneur skills in the field of agro business through theories and practices of agro business project management.

MBA Program Specific Outcomes G - Information Technology and Systems Management

- PSO1 **Apply** the concepts/theories of Information Technology and Systems Management to enhance decision making and solve business-related problems.
- PSO2 **Analyze** the technological environment in which business operates and **evaluate** alternatives.
- PSO3 **Develop** project management skills with a strong emphasis on issues and problems associated with delivering successful IT solutions.
- PSO4 **Design** and **build** the models of web designing and database management systems.



DEPARTMENT OF MANAGEMENT
KCES's College of Engineering and Information Technology

MBA Master of Business Administration

MBA Course Outcomes (w.e.f. 2017-2018)

PAPER - 101: Management Science- Course Outcomes:

After completion of this course, students will be able to

1. **Define** conceptual framework and evolution of management sciences.
2. **Explain** planning, organizing, directing, controlling as managerial functions
3. **Discuss** staffing, coordination and decision making in management
4. **Apply** Indian management practices
5. **Relate** global management practices
6. **Solve** case studies in management to enhance decision making ability

PAPER- 102 Corporate Communication Skills- Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the types of communication and barriers of communication
2. **Explain** communication process and essentials of soft skills
3. **Demonstrate** the skills of formal and informal writings, preparing reports, business letters, memorandum, notices, agenda, minutes of the meeting etc. into everyday practice.
4. **Illustrate** the difference between digital communication and conventional communication
5. **Assess** the result of social media communication channels
6. **Identify** new trends in digital communication

Paper: 103: Managerial Economics- Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the key concepts in managerial economics
2. **Explain** the various economic laws, theories and model related to managerial economics
3. **Analyse** the micro economic indicators and **apply** them for informed business decision making
4. **Identify** the different market structure and **decide** appropriate pricing strategies

Paper: 104: Human Resource Management- Course Outcomes:

After completion of this course, students will be able to

1. **Describe** Human Resource Management, its functions and practices
2. **Explain** human resource procurement process.
3. **Prepare** for career development and succession planning.
4. **Administer** performance appraisal system and **interpret** employee training, and executive development programs

Paper: 105: Business Accounting and Costing- Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the basic concepts related to accounting, financial statements and cost accounting.
2. **Prepare** reconciliation statements
3. **Analyse** the situation and decide the key financial as well as non-financial elements involved in the situation.
4. **Evaluate** the financial impact of the decision on the business.

Paper: 106: Organizational Behaviour I- Course Outcomes:

After completion of this course, students will be able to

1. **Predict** human behaviour at work
2. **Demonstrate** individual and interpersonal skills to improve group development.
3. **Apply** appropriate techniques of motivation
4. **Administer** power tactics to deal with organizational politics and **assess** work stress.

Paper- 107 Corporate Social Responsibility - Course Outcomes:

After completion of this course, students will be able to

1. **Define** social issues, emergence of business ethics and corporate social responsibility concepts
2. **Explain** the concepts of culture and morality.
3. **Illustrate** professional ethics, corporate social responsibility
4. **Assess** unethical behaviour in organizations
5. **Describe** issues in corporate governance

PAPER- 108 Statistics and Quantitative methods- Course Outcomes:

After completion of this course, students will be able to

1. **Use** various statistical measures like correlation, regression and index numbers.
2. **Conduct** Chi-Square Test, t-Test, and ANOVA for hypothesis testing
3. **Apply** CPM and PERT for effective project management.
4. **Practice** decision theory and game theory to solve business related problems.

Paper: 201: Business Research Methods- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the conceptual framework of research methodology.
2. **Identify** research problem and the factors of research design.
3. **Formulate** research question and **collect** quantitative and qualitative data
4. **Use** SPSS for hypothesis testing
5. **Interpret** data and **present** research findings

Paper- 202 Information Technology for Managers- Course Outcomes:

After completion of this course, students will be able to

1. **Recognize** role of IT in organizations.
2. **Test** and troubleshoot issues related to computer network.
3. **Explain** the use of IT in E-commerce, E-Banking and E-CRM (Customer Relationship Management)
4. **Created** database management systems using SQL and professional documents using the MS Office.

Paper- 203 Global Economic Scenario - Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the structure, features, and issues of Indian Economy
2. **Explain** the theories related to economic growth and development
3. **List** various macroeconomic policies of India
4. **Relate** the Indian Economy with Global Economy

Paper: 204: Marketing Management- Course Outcomes:

After completion of this course, students will be able to

1. **Define** marketing concepts, describe concepts of marketing mix marketing environments, segmentation
2. **Describe** consumer buying behaviour and discuss business market behaviour
3. **Explain** product management and pricing decisions
4. **Illustrate** marketing channels and promotion mix
5. **Assess** marketing strategy and marketing plan
6. **Identify** new trends in marketing

Paper: 205 Financial Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the traditional and modern approaches to financial management and concepts of finance
2. **Use** techniques of financial statement analysis, budgetary controls, standard costing for financial management.
3. **Prepare** cash flow statements
4. **Estimate** the working capital requirements

Paper: 206 Organization Behaviour II- Course Outcomes:

After completion of this course, students will be able to

1. **Identify** own leadership style; and prepare for advanced leadership roles in modern organization
2. **Outline** the elements of group behavior including group dynamics, communication, leadership, power & politics.
3. **Recognise** the importance of change management and stress management in organization.
4. **Practice** and **implement** organizational development and analyze which interventions are appropriate in differing circumstances.
5. **Apply** organizational behaviour concepts, models and theories to real life management situations through case analysis.

Paper: 207 Services Management- Course Outcomes:

After completion of this course, students will be able to

1. **Identify** the challenges in service sector and factors leading to success.
2. **List** service quality parameters, customer expectations and perceptions.
3. **Apply** service recovery strategies
4. **Select** service design and standards
5. **Determine** service promises
6. **Describe** emerging service sectors in India

PAPER- 208 Operations Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concepts of operations management
2. **Conduct** planning and control of capacity, location, facility and material
3. **Perform** inventory control and value analysis
4. **Describe** advanced concepts in production and operations management

Paper 301 - Strategic Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of strategic management
2. **Conduct** environmental scanning and appraisal
3. **Formulate** business level strategies and **conduct** industry life cycle analysis
4. **Select, implement, evaluate** and **control** the strategies.
5. **Utilize** strategic management concepts to solve case studies

Paper302 - Management Information Systems - Course Outcomes:

After completion of this course, students will be able to

1. **Recognize** the importance of information and management information system in business organizations.
2. **Explain** the development process of and security issues related to management information system
3. **Describe** Enterprise Resource Planning (ERP) and various applications of MIS.
4. **Utilize** the knowledge of management information system to solve case studies

Paper 303 - Legal Aspects of Business - Course Outcomes:

After completion of this course, students will be able to

1. **Use** key concepts of business law relating to contract formation, the selection of a business organization.
2. **Explain** in detail Sale of Goods Act, 1930, Limited Liability Partnership Act 2008, Negotiable Instrument Act, 1881 and Intellectual Property Laws
3. **Analyse** legal issues a company is facing with the knowledge gained.
4. **Utilize** the knowledge of business laws to solve case studies

PAPER 304A Banking and Investment Management - Course Outcomes:

After completion of this course, students will be able to

1. **Study** the banking system in India
2. **Perform** credit planning and management
3. **Analyse** various investment alternatives and determine security
4. **Explain** financial markets, insurance and mutual funds

PAPER-305A Tax Management - Course Outcomes:

After completion of this course, students will be able to

1. **Acquire** the knowledge of the concepts and provisions in Direct Taxation
2. **Apply** the tax provisions and calculate income from various heads
3. **Use** various compliances and procedures under Direct Tax Law.
4. **List** provisions of newly implemented Goods and Services Tax

PAPER-306A Strategic Financial Management - Course Outcomes:

After completion of this course, students will be able to

1. **List** various sources of finance and their peculiarities for financial decision making.
2. **Choose** the best option for raising the funds which can maximize the value of the business.
3. **Evaluate** the alternative choices and intelligent decision making with the help of Capital Budgeting
4. **Demonstrate** the parameters affecting dividend decision and fundamental understanding of dividend theories
5. **Identify** the symptoms of Corporate Sickness and recovering through Turnaround Strategies

6. **Recognize** the importance of strategies such as Merger, takeover, Joint Venture etc. that can enhance the firm's competitive strengths.

PAPER 307A Tally and Advanced Excel - Course Outcomes:

After completion of this course, students will be able to

1. **Use** tally to perform financial functions
2. **Analyze** financial data in Microsoft Excel
3. **Present** financial data in reports.
4. **Explain** the basics of Audit

PAPER 304 B Product and Brand Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of product, product line, product mix
2. **Conduct** category attractive analysis and customer analysis
3. **List** the elements of new product development
4. **Establish** Brand Positioning
5. **Measure** brand performance and advantages and disadvantages of branding

PAPER 305 B Consumer Behavior and Service Marketing- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of consumer behaviour and services marketing
2. **Analyse** cross cultural consumer behaviour.
3. **Formulate** strategies to acquire market share.
4. **Identify** various services required in the marketplace.

PAPER 306 B Sales and Distribution (Marketing SPL) - Course Outcomes:

After completion of this course, students will be able to

1. **Describe** selling function and highlight the managerial issues involved in sales management
2. **Modify** the changes in distribution function and understand current practices
3. **Identify** HR aspects involved in sales force management
4. **Determine** the role of channel intermediaries
5. **Develop** understanding about logistics and its role for marketing function

PAPER 307B Global Marketing Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of International Orientation & Stages
2. **Determine** product planning for global markets
3. **Analyze** global marketing environment and **determine** costing & promotional strategies in international marketing
4. **Evaluate** international logistics alternatives
5. **Describe** Export procedure & perform documentation

1. **Describe** the concept of Human Capital Management
2. **Perform** Job Analysis
3. **Identify** and **choose** proper selection tests in procurement process.
4. **Develop** Effectiveness of HR
5. **Justify** the performance of high potential employees.
6. **Map** competencies among individuals.

Paper- 306-C: Strategic Human Resource Management - Course Outcomes:

After completion of this course,,students will be able to

1. **Integrate** strategy along with human resource management
2. **Acquire** the knowledge of the conceptual approach of SHRM
3. **Recognize** human resource as strategic value addition function
4. **Explain** Employee engagement
5. **Identify** the role of IT in Strategic HRM
6. **Manage** effectively the contribution of human resource management to organizational performance

Paper- 307-C Labour Laws- Course Outcomes:

After completion of this course, students will be able to

1. **Study** various labour laws applicable to Indian industries
2. **List** various benefits available under labour laws
3. Use the knowledge of labour laws to prepare sound human resource policies.
4. **Protect** the rights of human resource

PAPER- 304-D World Class Manufacturing and Process Management - Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the manufacturing trends in industries.
2. **Integrate** knowledge from world class manufacturing to process management from specifically manufacturing industries.
3. **Implement** best practice approaches to industrial safety management and learn from the challenges involved in manufacturing industries.
4. **Develop** a critical perspective with respect to process management.

PAPER- 305-D Management of Technology- Course Outcomes:

After completion of this course, students will be able to

1. **Select** and **apply** disciplinary knowledge in discussing (individual assignment) and creating (group assignment) innovative technological solutions.
2. **Analyze** and propose solutions to innovation and technology business issues.
3. **Discuss** ethical and environmental implications of technological innovation.
4. **Recognize** social and cultural implications of technological innovation.

PAPER- 306-D Logistics and Supply Chain Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** logistics, its framework and practical utility.
2. **Apply** various concepts in logistics and supply chain management.
3. **Use** logistics as an important tool to reach goals of cost reduction and enhance customer service.
4. **Recognize** the importance of logistics management in achieving integration.

PAPER- 307-D Operation Research- Course Outcomes:

After completion of this course, students will be able to

1. **Identify** and **develop** operational research models from the verbal description of the real system.
2. **Use** the mathematical tools that are needed to solve optimization problems.
3. **Introduce** the students to the advanced methods for large-scale transportation and assignment problems.
4. **Practice** the tools from optimization, probability, statistics, simulation, and engineering economic analysis, including fundamental applications of those tools in industry and the public sector in contexts involving uncertainty and scarce or expensive resources.

PAPER 304 E International Business- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** various terms in international business management
2. **List** the modes of international business.
3. **Apply** in-depth knowledge of theories of International Trade
4. **Build** international trade strategies.

PAPER 305 E International Logistics and Supply Chain Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concepts of International Logistics Management
2. **List** the types and features of global transportation
3. **Identify** the need and role of outsourcing in global supply chain management.
4. **Recognize** the role of information system in international logistics and supply chain management.
5. **Plan** global supply chain

PAPER 306 E Export Import Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** fundamentals of export and import.
2. **Use** procedures of Exports and Imports
3. **Prepare** the list for documentation
4. **Plan** import
5. **Describe** export import policy and various institutions involved in foreign trade

PAPER 307 E International Finance and Forex Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concepts of international financial management
2. **Acquire** in-depth knowledge on Forex Management
3. **Describe** international tax and monetary system
4. **Recognize** the need for balance of payment.

PAPER 304 F Agro Business Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of Agro business, role of promotional agencies in the development of agro business.
2. **Provide** students an exposure to the management practices in Agro Business Management.
3. **Analyze** different issues related to Agro Business management.
4. **Classify** the various sectors present in food processing industry.
5. **Study** the role of HRM in agro business.

PAPER 305 F Management of Agro Based Industries - Course Outcomes:

After completion of this course, students will be able to

1. **Acquire** the knowledge of the concepts, tools and techniques of Management of agro based industries.
2. **Use** the conceptual approach of allied sciences related to agro business.
3. **Recognize** role of technology in management of agro business.
4. **Study** the importance and application of value addition in animal products.
5. **Develop** analytical and conceptual skills and the ability to handle the various situations related to agro business.

PAPER 306 F Agri-Business Financial Management - Course Outcomes:

After completion of this course, students will be able to

1. **Acquire** the knowledge of the perspective of economics and accounting related agricultural operations.
2. **Study** the structure, dynamics and various Government agricultural policies.
3. **Use** of financial management principles in agro business.
4. **Recognize** the role and functions of various financial institutions to promote entrepreneurship in agro related industries.
5. **Develop** analytical and conceptual skills and the ability to handle the various situations related to financial management of agro business.

PAPER 307 F Agricultural Marketing - Course Outcomes:

After completion of this course, students will be able to

1. **Apply** the concept of agriculture marketing.
2. **Study** the link between development of agriculture marketing with economic development and future perspective.
3. **Use** retail marketing in agro business.
4. **List** the marketing promotion strategies of agro products and related problems.
5. **Develop** analytical and conceptual skills and the ability to handle the various situations related to marketing of agro products.

PAPER 304 G HTML & Website Management

After completion of this course, students will be able to

1. **Explain** the use of basic HTML tags
2. **Design** website using various tags
3. **Describe** website and email management
4. **Use** search engine for web searching

PAPER 305 G Computer Networks

After completion of this course, students will be able to

1. **Describe** the basic architecture of Computer Network
2. **Design** a computer network
3. **Explain** different network protocols and network services
4. **List** network security issues and troubleshooting tools

PAPER 306 G RDBMS using ORACLE - Course Outcomes:

After completion of this course, students will be able to

1. **Use** the concepts of database management systems to manage organizational data.
2. **Design** database according to company requirements.
3. **Organize and retrieve** data according to required format.
4. **Modify** the data as per requirement.

PAPER 307 G Software Engineering

After completion of this course, students will be able to

1. **Plan and organize** an information systems development project.
2. **Apply** system analysis and design techniques to define and document information system requirements
3. **Develop** object-oriented models (UML diagrams) of information systems
4. **Evaluate** models of an information system

PAPER 308 Fieldwork/ Survey Assignment Project - Course Outcomes:

After completion of this course, students will be able to

1. **Identify, record and integrate** knowledge of social problems around.
2. **Recall** the meaning of the terminology and the tools used in research problem formulation
3. **Prepare, interpret, and apply** relevant social research information.
4. **Evaluate** information about social problems and use that information for comparative purposes
5. **Develop** an organized, written and visual documentation and reflection of student performances and accomplishments of survey assignment

PAPER 401- Business and Government - Course Outcomes:

After completion of this course, students will be able to

1. **Analyze** the current Indian business scenario.
2. **List** various business and economic policies of Indian Government
3. **Apply** Management Systems (MS)- Certification Schemes
4. **Study** Indian Rural Economy

PAPER 402 – Innovation Management– Course Outcomes:

After completion of this course, students will be able to

1. **Explain** basics of innovation and creativity
2. **Perform** planning and organizing of innovation
3. **Describe** factors, process and outsourcing of new product development.
4. **Manage** creative people in the organization
5. **Identify** the challenges and legal issues involved in innovation.

PAPER 403 - Indian Commercial Laws - Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the details of the company according to Companies Act 2013
2. **Increase** the understanding level of individual about rights as a consumer.
3. **Aware** about the basic terms in the field of Information Technology act.
4. **Provide** the practical aspects in the light of legal case study.

PAPER 404 - Entrepreneurship and Project Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** basic concepts related to entrepreneur and entrepreneurship.
2. **Evaluate** the role of institutions in entrepreneurship development
3. **Identify** merging areas in entrepreneurship
4. **Recognize** the issues in family business management
5. **Describe** projects and project management

PAPER-405-A Financial Derivatives - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the concept of derivatives.
2. **Distinguish** between forward, future and options contract
3. **Use** derivative instruments
4. **Apply** techniques of hedging the risks.

PAPER-406A International Finance Management - Course Outcomes:

After completion of this course, students will be able to

1. **Describe** the working in international financial management environment
2. **Identify** various factors affecting the foreign exchange and international monetary system.
3. **Explain** transfer pricing, convergence of accounting standards to International Financial Reporting Standards
4. **List** the components of Balance of Payment as well as effect of balance of payment on exchange rate and Money Supply as well
5. **Recognize** the operations in International Banking and Euro currency Market

PAPER -407A Case Studies in Financial Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the Financial Case and the various factors that contribute to the decisionmaking
2. **Analyze** and **demonstrate** the interrelationships of various factors while taking sound financial decisions
3. **Plan** and control the operating activities of the business
4. **Apply** the knowledge of managing Cash, Inventory, Debtors and working Capital as a whole to the given situation and find optimum solution
5. **Evaluate** various alternatives in Capital Investment Analysis as well as Cost-Volume-Profit Analysis and arrive on sound financial decisions
6. **Make** sound fund raising decisions considering various factors as Cost of Capital, Leverage etc.

PAPER 405-B Marketing Research and Business Analytics

After completion of this course, students will be able to

1. **Cultivate** research skills in marketing
2. **Conduct** consumer survey, fieldwork and interviews
3. **Focus** on qualitative (exploratory) and quantitative research execution and the application of research findings and analysis in decision making.
4. **Identify** the practical applications of research

PAPER 406-B Retail Management and Digital Marketing

After completion of this course, students will be able to

1. **Develop** understanding about the retail sector and its current requirements
2. **Identify** new trends of using technology to handle developments in markets and marketing practices.
3. **Perform** merchandise management and store management effectively.
4. **Recognize** the use of and innovations in information technology in customer service, supply chain management and e-tailing

PAPER 407 C Case studies in Marketing (Marketing SPL)

After completion of this course, students will be able to

1. **Enhance** analytical skills of students
2. **Develop** decision making ability of students
3. **Use** quantitative data for managerial decision making
4. **Apply** knowledge acquired to practical situations

PAPER 405 C – Performance & Compensation Management

After completion of this course, students will be able to

1. **List** purposes, characteristics, determinants of performance system
2. **Describe** performance management process in detail
3. **Evaluate** jobs and determine grades
4. **Develop** a salary administration policy
5. **Use** financial incentives and fringe benefits to motivate employees

PAPER 406 C-International Human Resource Management

After completion of this course, students will be able to

1. **Compare** the international human resource management with domestic human resource management.
2. **Identify** social, cultural, legal and compensation related issues involved in managing international human resource
3. **Develop** sound human resource management practices in international context
4. **Use** the process of repatriation effectively.

PAPER- 407-C Cases in Human Resource Management - Course Outcomes:

After completion of this course, students will be able to

1. **List** what human resource managers should and should not do in guiding a business to success.
2. **Identify** strategic human resource management issues that need to be addressed
3. **Evaluate** strategic alternatives, and formulate workable plans of action.
4. **Acquire** knowledge of human resource practices used by different industries and companies

PAPER- 405-D Industrial and Productivity Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the basic concepts of productivity of organization.
2. **Customizes** sustainable productivity concept and engaging the workforce to be motivated.
3. **Measure** optimal utilization of plant and equipment to reduce waste and scrap.
4. **Generate** and **evaluate** alternatives for constraint-based production.

PAPER- 406-D International Quality Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the different meanings of the quality concept and its influence.
2. **Distinguish** and **use** the several techniques and quality management tools.
3. **Describe** the regulation and the phases of a quality system certification process.
4. **Evaluate** the principles of quality management and to explain how these principles can be applied within quality management systems.

PAPER- 407-D Cases in Operations Management - Course Outcomes:

After completion of this course, students will be able to

1. **Develop** solutions to various operations management issues using established analytic and problem-solving techniques
2. **Integrate** knowledge from all the operations management disciplines (such as Industrial management, worked class manufacturing, productivity etc.) into the decision-making process
3. **Implement** best practice approaches to operations management and learn from the challenges and pitfalls of real-life situations;
4. **Develop** a critical perspective with respect to operations management.

PAPER- 405-E International HRM and Diversity Management - Course Outcomes:

After completion of this course, students will be able to

1. **Recognize** role of HRM in international context
2. **Integrate** multinational corporations' human resource strategies with business strategies
3. **Identify** and **solve** issues related to global industrial relations and cultural diversity.
4. **Appreciate** the implications of increasing globalization for the management of human resources, with particular reference to IHRM in multinational corporations
5. **Innovate** strategies to manage globally diversified teams.

PAPER- 406-E International Marketing Management - Course Outcomes:

After completion of this course, students will be able to

1. **Explain** international markets, its environment and entry strategies
2. **Develop** sound product, pricing and promotion strategies
3. **Identify** the challenges before international marketer in twenty first century
4. **Describe** import and export planning, financing and strategies

PAPER- 407-E Case Studies in IBM - Course Outcomes:

After completion of this course, students will be able to

1. **Enhance** analytical skills of students
2. **Analyze** marketing, finance, human resource functions in relation to international business context.
3. **Develop** ability to use quantitative data for managerial decision making
4. **Develop** decision making ability of students

PAPER- 405-F Rural Development- Course Outcomes:

After completion of this course, students will be able to

1. **Recognize the need of** rural development.
2. **Identify** the determinants of rural development
3. **Use** various government promotion policies related to rural development.
4. **Improve** employment generation using various employment generation programs
5. **Explain** the role of banking and financial institutions in the rural development.
6. **Describe** the functioning of administration and Panchayat Raj system.

PAPER- 406-F Agro Entrepreneurship and Project Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the basic concepts of rural entrepreneurship.
2. **Acquire** motivation to become agripreneur by studying success stories of agripreneurs.
3. **Study** the principles and concept of project management to start a new project and its overall management.
4. **Identify, plan and implement** the agro project.
5. **Perform** financial analysis to plan for investment in agro project.
6. **Prepare** project reports for various agro products.

PAPER 407 F Case studies in Agri Business Management- Course Outcomes:

After completion of this course, students will be able to

1. **Create awareness** about various issues related to agro business by introducing real life situations.
2. **Identify** problem related to given situation and evaluate various alternatives to select best solution
3. **Enhance** decision making ability and critical thinking of students related to the handling of various issues in agro business.
4. **Develop** conceptual and analytical skills

PAPER 405-G Information System Audit- Course Outcomes:

After completion of this course, students will be able to

1. **Recognize** the need for information system audit.
2. **List** the audit risks, types of audit procedures and steps of audit.
3. **Perform** planning, organizing, staffing, leading and controlling of information system audit.
4. **Classify** information assets and users
5. **Explain** types of controls to minimize computer crimes.
6. **Apply** disaster recovery techniques.

PAPER 406-G ICT & Business Application- Course Outcomes:

After completion of this course, students will be able to

1. **Describe** information and communication technology (ICT) systems infrastructure
2. **Explain** different business segments
3. **List** the benefits and limitations of information and communication technology
4. **Recognize** the role of information and communication technology in various business applications.
5. **Prepare** to study the ICT applications with reference to the case study of the given systems.

PAPER 407-G Software Project Management- Course Outcomes:

After completion of this course, students will be able to

1. **Explain** the fundamentals of software project management
2. **Describe** software project management process in detail.
3. **Evaluate** software requirement specifications.
4. **Use** project management tools for design and analysis of software project.
5. **Assure** quality standards while managing software project.
6. **Implement** the project and evaluate post implementation performance.

PAPER 408 Summer Internship Project - Course Outcomes:

After completion of this course, students will be able to

1. **Integrate** knowledge from functional business areas to business situations
2. **Recall** the meaning of the terminology and the tools used in business strategy formulation
3. **Evaluate** information about a business, industry, sector, or market and use that information for comparative purposes
4. **Develop** an effective skillset in problem analysis
5. **Prepare** a tactically organized, written and visual documentation
6. **Demonstrates** skills such as leadership, teamwork, cooperation, and interpersonal

