



# **Kathir College of Engineering**

Wisdom Tree, Avinashi Road, Neelambur, Coimbatore 641062

## **Criteria-2**

### **Teaching-learning and Evaluation**

#### **Sub Criteria 2.6**

### **Student Performance and Learning Outcomes**

**2.6.1: Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.**



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## PROGRAM OUTCOMES

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.



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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.



  
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## PROGRAM SPECIFIC OUT COMES OF CIVIL ENGINEERING

PSO1	Analyze, design, construct, manage, maintain and operate infrastructure and development projects.
PSO2	Evaluate the environmental collision of various projects and take required measures to control environmental issues.

## PROGRAM SPECIFIC OUT COMES OF COMPUTER SCIENCE AND ENGINEERING

PSO1	Design data structures and database management systems with a recurrent programming language to provide software solutions.
PSO2	In the fields of artificial intelligence, big data, and cloud computing, use problem-solving techniques.

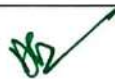
## PROGRAM SPECIFIC OUT COMES OF ELECTRONICS AND COMMUNICATION ENGINEERING

PSO1	To apply the Engineering knowledge to develop Innovative Ideas for existing / Novel problems through information and communication technologies (ICT).
PSO2	To design the Analog and Digital system and practice for Developing Quality products.
PSO3	Understand social needs and environmental concerns with ethical responsibility to become a successful professional.

## PROGRAM SPECIFIC OUT COMES OF ELECTRICAL AND ELECTRONICS ENGINEERING

PSO1	Ability to Integrate the fundamental knowledge of mathematics, science, electrical engineering to solve complex problems in electrical, electronics and interdisciplinary areas.
PSO2	Ability to design and meet the demands of industry using the state of the art components and software tools



  
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## PROGRAM SPECIFIC OUT COMES OF MECHANICAL ENGINEERING

PSO1	Understand the requirements and play their professional role to solve real-world problems in the mechanical engineering domains such as manufacturing, design, thermal, fluid power and materials engineering.
PSO2	Work in teams to create products by integrating multi disciplinary modules.



  
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**DEPARTMENT OF SCIENCE & HUMANITIES**





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## COURSE OUTCOMES

Regulation- 2017 - UG

YEAR/SEMESTER : I/I	
<b>C101/HA8151- COMMUNICATIVE ENGLISH</b>	
<b>C101.1</b>	Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
<b>C101.2</b>	Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
<b>C101.3</b>	Read different genres of texts adopting various reading strategies.
<b>C101.4</b>	Listen/view and comprehend different spoken discourses/excerpts in different accents.
<b>C101.5</b>	Gaining capacity, skills enabling the students to write personal letters, official letters and E-mails in English effectively. Enabling students to enhance their conversational skills in spoken and written forms.
<b>C102/MA8151-ENGINEERING MATHEMATICS -I</b>	
<b>C102.1</b>	Have basic knowledge and understanding in one field of materials, integral and differential calculus.
<b>C102.2</b>	Utilize methods of integration to compute volumes of objects with circular shaped aspects, and compute lengths of curves.
<b>C102.3</b>	Read and understand problem descriptions, then be able to formulate equations modelling the problem usually by applying geometric or physical principles.
<b>C102.4</b>	Use integration to compute problems important in physics and engineering.
<b>C102.5</b>	Find the area of plane curves and volume of solids using double and triple integrals.
<b>C103/PH8151 - ENGINEERING PHYSICS</b>	
<b>C103.1</b>	Have knowledge on the basics of physics related to properties of matter, optics, and acoustics.



  
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<b>C103.2</b>	Apply these fundamental principles to solve practical problems related to materials used for engineering applications.
<b>C103.3</b>	Understand working principle of a LASER, components and working of different laser system and their engineering applications
<b>C103.4</b>	Understand the principle and working of particle detectors
<b>C103.5</b>	Examine the characteristics of laser and optical fiber.
<b>C104/CY8151 ENGINEERING CHEMISTRY</b>	
<b>C104.1</b>	Apply this knowledge to the analysis and design of batteries.
<b>C104.2</b>	Phase rule concept is used to know the heat treatment process of alloy.
<b>C104.3</b>	Know the properties of Lubricants.
<b>C104.4</b>	The knowledge gained on polymer chemistry, thermodynamics, Spectroscopy, phase rule and nano materials will provide a strong platform to understand the concepts on these subjects for further learning.
<b>C104.5</b>	Outline the synthesis, characteristics and the applications of nano materials.
<b>C105/GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING</b>	
<b>C105.1</b>	Develop algorithmic solutions to simple computational problems.
<b>C105.2</b>	Read, write, execute by hand simple Python programs.
<b>C105.3</b>	Structure simple Python programs for solving problems.
<b>C105.4</b>	Decompose a Python program into functions.
<b>C105.5</b>	Represent compound data using Python lists, tuples, dictionaries. Read and write data from/to files in Python Programs.
<b>C106/GE8152-ENGINEERING GRAPHICS</b>	
<b>C106.1</b>	Perform free hand sketching of basic geometrical constructions and multiple views of objects.
<b>C106.2</b>	Do orthographic projection of lines and plane surfaces.
<b>C106.3</b>	Draw projections and solids and development of surfaces.



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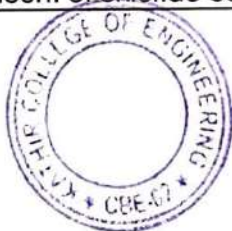


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C106.4	Prepare isometric and perspective sections of simple solids.
C106.5	Demonstrate computer aided drafting.
<b>C107/GE8161-Problem Solving and Python Programming Laboratory</b>	
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.
<b>C108/BS8161-Chemistry Laboratory</b>	
C108.1	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related to parameters.
C108.2	To determine the amount of metal ions through volumetric and spectroscopic techniques
C108.3	To analyse and determine the composition of alloys
C108.4	To quantitatively analyse the impurities in solution by electroanalytical techniques
<b>C109/BS8161 - PHYSICS AND CHEMISTRY LABORATORY</b>	
C109.1	Apply principles of elasticity, optics and thermal properties for Engineering applications
C109.2	Determine the Modulus of elasticity of materials and Coefficient of Viscosity of liquids and to determine the Thermal Conductivity of bad conductor using Lee's disc method
C109.3	Measure the wavelength of prominent spectral lines of Mercury Spectrum and particle size of powder using diffraction phenomenon and thickness of thin materials using interference phenomenon, Determine the band gap energy of a semiconductor
C109.4	Calculate water quality parameters such as hardness, alkalinity of the given water sample, Estimate the amount of the given acids using conductometric titrations.
C109.5	Estimate the amount of the given acids using pH titrations, Determine the amount of iron content in the given substance using potentiometric titration, Determine the amount of chloride content in the given water sample.



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SEMESTER -II	
C201/HS8251-TECHNICAL ENGLISH	
<b>C201.1</b>	Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, and argue using appropriate communicative strategies.
<b>C201.2</b>	Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.
<b>C201.3</b>	Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.
<b>C201.4</b>	Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings.
<b>C201.5</b>	Enhancing student's skills in report writing, job application, paragraph writing and other forms of writing skills.
C202/MA8251-ENGINEERING MATHEMATICS – II	
<b>C202.1</b>	Develop the fundamentals and basic concepts in vector calculus, ODE, Laplace transform and complex functions.
<b>C202.2</b>	Solve problems related to engineering applications by using these techniques.
<b>C202.3</b>	To have an ability of mathematical modelling of systems using differential equations and ability to solve the differential equations.
<b>C202.4</b>	Use Green's theorem to evaluate line integrals along simple closed contours on the plane and use Stokes' theorem to give a physical interpretation of the curl of a vector field.
<b>C202.5</b>	Expand functions of two variables as Taylor's and Laurent's series and evaluate Contour integrals using Cauchy's formula.
C203/PH8253-Physics For Electronics Engineering	
<b>C203.1</b>	Knowledge on classical and quantum electron theories, and energy band structures
<b>C203.2</b>	Knowledge on basics of semiconductor physics and its applications in various devices



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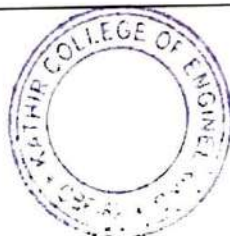


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<b>C203.3</b>	Knowledge on magnetic and dielectric properties of materials
<b>C203.4</b>	Understanding on the functioning of optical materials for optoelectronics
<b>C203.5</b>	Understanding on the functioning of Nano electronic devices
<b>C204/BE8254/BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING</b>	
<b>C204.1</b>	Fundamentals of semiconductor and basic theorems used in Electrical circuits
<b>C204.2</b>	Design amplifier circuits under CB, CE, CC Configurations.
<b>C204.3</b>	Design the Adders – Flip-Flops – Registers and Counters with logic gates.
<b>C204.4</b>	Discuss the Principles of Amplitude and Frequency Modulations and various blocks communication Systems
<b>C204.5</b>	Demonstrate the working of Television systems, FAX machines and micro wave systems.
<b>C205/C113 /EC8251/CIRCUIT ANALYSIS</b>	
<b>C205.1</b>	Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time
<b>C205.2</b>	Design and understand and evaluate the AC and DC circuits.
<b>C205.3</b>	Practical implications of the fundamentals of Ohm's law, Kirchhoff's current and voltage laws
<b>C205.4</b>	Accurate measurement of voltage, current, power and impedance of any circuit
<b>C205.5</b>	DC analysis, Transient analysis and Frequency analysis of a given circuit depending on types of elements
<b>C205.6</b>	Practical implementation of the fundamental electrical theorems and modeling of simple electrical systems
<b>C206/C114/ EC8252/ELECTRONIC DEVICES</b>	
<b>C206.1</b>	Describe the principle and characteristics of semiconductor diode
<b>C206.2</b>	Analyze various transistor configurations
<b>C206.3</b>	Construct large signal modeling and small signal modeling of a transistor
<b>C206.4</b>	Describe the principle of operation and characteristics of special Semiconductor diodes
<b>C206.5</b>	Discuss the operation of various semiconductor photo devices and power electronic devices
<b>C207/ EC8261/CIRCUITS AND DEVICES LABORATORY</b>	
<b>C207.1</b>	Identify the basic devices and its configurations



  
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C207.2	Analyze the resistive circuits with different sources
C207.3	Obtain the resonance for different configurations of RLC
C207.4	Explain the response of RLC circuit with different inputs
C207.5	Understand the operation of basic solid state devices
<b>C208 / GE8261 / ENGINEERING PRACTICES LABORATORY</b>	
C208.1	Gets exposure regarding Joining operations in engineering materials.
C208.2	Carry out the basic machining operations in engineering materials.
C208.3	Carry out basic home electrical works and appliances
C208.4	Measure the electrical quantities
C208.5	Understand basic electronic components.
C208.6	Integrate the components and gates using soldering practices.



  
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## DEPARTMENT OF CIVIL ENGINEERING

### COURSE OUTCOMES (SEM III – VIII)\_Regulation– 2017 – UG

YEAR/SEMESTER : II/III	
<b>C301/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b>	
<b>C301.1</b>	Analyze Partial Differential Equations in various methods.
<b>C301.2</b>	Solving Fourier Series for different types of functions.
<b>C301.3</b>	Computing the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions
<b>C301.4</b>	Deduce the Gaussian function in Self reciprocal form using Fourier Transforms.
<b>C301.5</b>	Formation of finite difference method in Z-transforms.
<b>C302/ CE8301- Strength of Materials I</b>	
<b>C302.1</b>	The students will be able to understand the concepts of stress and strain, principal stresses and principal planes
<b>C302.2</b>	The students will be able to determine Shear force and bending moment in beams and understand concept of theory of simple bending
<b>C302.3</b>	The students will be able to calculate the deflection of beams by different methods and selection of method for determining slope or deflection
<b>C302.4</b>	The students will be able to apply basic equation of torsion in design of circular shafts and helical springs
<b>C302.5</b>	The students will be able to analyze the pin jointed plane and space trusses
<b>C303/ CE8302- Fluid Mechanics</b>	
<b>C303.1</b>	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium
<b>C303.2</b>	Understand and solve the problems related to equation of motion
<b>C303.3</b>	Gain knowledge about dimensional and model analysis
<b>C303.4</b>	Learn types of flow and losses of flow in pipes



  
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C303.5	Understand and solve the boundary layer problems
<b>C304/ CE 8351- Surveying</b>	
C304.1	Understand the use of various surveying instruments and mapping
C304.2	Measure Horizontal angle and vertical angle using different instruments
C304.3	Analyze methods of Leveling and setting Levels with different instruments
C304.4	Understand concepts of astronomical surveying and methods to determine time, longitude, latitude, and azimuth
C304.5	Apply Concept and principle of modern surveying
<b>C305/ CE 8391- Construction Materials</b>	
C305.1	Compare the properties of most common and advanced building materials
C305.2	Understand the typical and potential applications of lime, cement and aggregates
C305.3	Know the production of concrete and also the method of placing and making of concrete elements
C305.4	Understand the applications of timbers and other materials
C305.5	Analyze the importance of modern material for construction
<b>C306/ CE8392- Engineering Geology</b>	
C306.1	Understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies
C306.2	Get basic knowledge on properties of minerals
C306.3	Understand the methods of study on geological structure
C306.4	Gain knowledge about types of rocks, their distribution and uses
C306.5	Analyze the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor
<b>C307/ CE8311 Construction Materials Laboratory</b>	
C307.1	Understand the behavior of Fine Aggregates
C307.2	Understand the behavior of Coarse Aggregates
C307.3	Analyze the behavior of Concrete
C307.4	Understand the behavior of Bricks and Blocks



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C207.5	Gain Knowledge in testing of construction materials and components of construction elements experimentally
<b>C308/ CE8361- Surveying Laboratory</b>	
C308.1	Study of chains and its accessories, Aligning, Ranging, Chaining and Marking Perpendicular offset
C308.2	Acquire practical knowledge on handling basic survey instruments including Tacheometry, Theodolite
C308.3	Acquire practical knowledge on handling modern survey instruments including Total station, GPS
C308.4	Gain adequate knowledge in Triangulation and Astronomical surveying.
C308.5	Acquire knowledge about Survey field techniques
<b>C309/HS8381-INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b>	
C309.1	Take international examination such as IELTS and TOEFL
C309.2	Participate in Group Discussion.
C309.3	Successfully answer questions in Interviews.
C309.4	Make effective Presentations.
C309.5	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : II/IV</b>	
<b>C401/ MA8491- Numerical Methods</b>	
C401.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations
C401.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations
C401.3	Apply the numerical techniques of differentiation and integration for engineering problems
C401.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations
C401.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications
<b>C402/ CE8401- Construction Techniques and Practices</b>	



  
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C402.1	Know the different construction techniques and structural systems
C402.2	Understand various techniques and practices on masonry construction, Flooring, and roofing
C402.3	Plan the requirements for substructure construction
C402.4	Know the methods and techniques involved in the construction of various types of super structures
C402.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites
<b>C403/ CE8402- Strength of Materials II</b>	
C403.1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles
C403.2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements
C403.3	Find the load carrying capacity of columns and stresses induced in columns and cylinders
C403.4	Determine principal stresses and planes for an element in three-dimensional state of stress and study various theories of failure
C403.5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beam
<b>C404/ CE8403- Applied Hydraulic Engineering</b>	
C404.1	Apply their knowledge of fluid mechanics in addressing problems in open channels
C404.2	Able to identify an effective section for flow in different cross sections
C404.3	To solve problems in uniform, gradually and rapidly varied flows in steady state conditions
C404.4	Understand the principles, working and application of turbines
C404.5	Understand the principles, working and application of pumps
<b>C405/ CE8404-S Concrete Technology</b>	
C405.1	Understand various requirements of cement, aggregates and water for making concrete
C405.2	Analyze effect of admixtures on properties of concrete
C405.3	Apply concept and procedure of mix design as per IS method
C405.4	Apply properties of concrete at fresh and hardened state



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C405.5	Gain knowledge on importance and application of special concretes
<b>C406/ CE8491- Soil Mechanics</b>	
C406.1	Classify the soil and assess the engineering properties, based on index properties
C406.2	Understand the stress concepts in soils
C406.3	Understand and identify the settlement in soils
C406.4	Determine the shear strength of soil
C406.5	Analyze both finite and infinite slopes
<b>C407/ CE8481- Strength of Materials Laboratory</b>	
C407.1	Study the action of various forces and determination of their characteristics experimentally
C407.2	Gain knowledge in the area of testing on steel rod
C407.3	Acquire Knowledge in the area of testing on wood
C407.4	Apply the procedures in the area of testing on metal
C407.5	Apply the techniques in the area of testing on spring
<b>C408/ CE8461- Hydraulic Engineering Laboratory</b>	
C408.1	The students will be able to measure flow in pipes and determine frictional losses
C408.2	The students will be able to develop characteristics of pumps and turbines
C408.3	Students should be able to verify the principles studied in theory by performing Flow Measurement
C408.4	Students should be able to verify the principles studied in theory by performing Losses in Pipes
C408.5	Students should be able to verify the principles studied in theory by Determination of Metacentric height
<b>C409/HS8461-ADVANCED READING AND WRITING</b>	
C409.1	Make effective Presentations.
C409.2	Participate in Group Discussion.
C409.3	Successfully answer questions in Interviews.
C409.4	Take international examination such as IELTS and TOEFL



  
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C409.5	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : III/V</b>	
<b>C501/ CE 8501- Design of Reinforced Cement Concrete Elements</b>	
C501.1	Understand the various design methodologies for the design of RC elements
C501.2	Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion
C501.3	Design the various types of slabs and staircase by limit state method
C501.4	Design columns for axial, uniaxial and biaxial eccentric loadings
C501.5	Design footing by limit state method
<b>C502/ CE8502- Structural Analysis I</b>	
C502.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
C502.2	Analyze the continuous beams and rigid frames by slope deflection method
C502.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway
C502.4	Analyze the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method
C502.5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames
<b>C503/ EN8491- Water Supply Engineering</b>	
C503.1	Gain insight into the structure of drinking water supply systems, including water transport, treatment and distribution
C503.2	Acquire knowledge in various unit operations and processes in water treatment
C503.3	Design the various functional units in water treatment
C503.4	Understand water quality criteria and standards, and their relation to public health
C503.5	Design and evaluate water supply project alternatives on basis of chosen criteria
<b>C504/ CE8591- Foundation Engineering</b>	
C504.1	Understand the site investigation, methods and sampling
C504.2	Gain knowledge on bearing capacity and testing methods
C504.3	Design shallow footings



  
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<b>C504.4</b>	Determine the load carrying capacity, settlement of pile foundation
<b>C504.5</b>	Determine the earth pressure on retaining walls and analysis for stability
<b>C505/ GI8013- Advanced Surveying</b>	
<b>C505.1</b>	Gain knowledge on astronomical surveying
<b>C505.2</b>	Perform photogrammetric surveying and interpretation
<b>C505.3</b>	Solve the field problems with Total station
<b>C505.4</b>	Acquire knowledge on GPS surveying and the data processing
<b>C505.5</b>	Understand the route surveys and tunnel alignments
<b>C506/ CE8511- Soil Mechanics Laboratory</b>	
<b>C506.1</b>	To develop skills to test the soils for their index and engineering properties and to characterize the soil based on their properties
<b>C506.2</b>	To develop skills to test the soils for determination of Index Properties
<b>C506.3</b>	To develop skills to test the soils for determination of in-situ density and compaction characteristics
<b>C506.4</b>	To develop skills to test the soils for determination of engineering properties
<b>C506.5</b>	To conduct tests to determine both the index and engineering properties of soils and to characterize the soil based on their properties
<b>C507/ CE8512- Water and Waste Water Analysis Laboratory</b>	
<b>C507.1</b>	To analyze the physical, chemical and biological characteristics of water and wastewater
<b>C507.2</b>	To quantify the dosage requirement for coagulation process
<b>C507.3</b>	To study the growth of micro-organism and its quantification
<b>C507.4</b>	To quantify the sludge
<b>C507.5</b>	To Quantify the pollutant concentration in water and wastewater
<b>C508/ CE8513- Survey Camp</b>	
<b>C508.1</b>	Enable the students to get practical training in the field work
<b>C508.2</b>	Involve work on a large area
<b>C508.3</b>	Student shall have mapped and contoured the area
<b>C508.4</b>	Use of GPS to determine latitude and longitude and locate the survey camp location



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C508.5	Survey exercises in other area also based on site condition to give good exposure on survey
<b>YEAR/SEMESTER : III/VI</b>	
<b>C601/ CE8601- Design of Steel Structural Elements</b>	
C601.1	Understand the concepts of various design philosophies
C601.2	Design common bolted and welded connections for steel structures
C601.3	Design tension members and understand the effect of shear lag
C601.4	Understand the design concept of axially loaded columns and column base connections
C601.5	Design laterally restrained and unrestrained steel beams
<b>C602/ CE8602- Structural Analysis II</b>	
C602.1	Draw influence lines for statically determinate structures and calculate critical stress resultants
C602.2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams
C602.3	Analyze of three hinged, two hinged and fixed arches
C602.4	Analyze the suspension bridges with stiffening girders
C602.5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames
<b>C603/ CE8603- Irrigation Engineering</b>	
C603.1	Have knowledge and skills on crop water requirements
C603.2	Understand the methods and management of irrigation
C603.3	Gain knowledge on types of Impounding structures
C603.4	Understand methods of irrigation including canal irrigation
C603.5	Get knowledge on water management on optimization of water use
<b>C604/ CE8604- Highway Engineering</b>	
C604.1	Get knowledge on planning and aligning of highway
C604.2	Geometric design of highways
C604.3	Design flexible and rigid pavements



  
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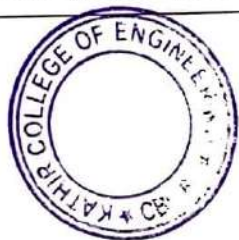


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<b>C604.4</b>	Gain knowledge on Highway construction materials, properties, testing methods
<b>C604.5</b>	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements
<b>C605/ EN8592- Wastewater Engineering</b>	
<b>C605.1</b>	An ability to estimate sewage generation and design sewer system including sewage pumping stations
<b>C605.2</b>	The required understanding on the characteristics and composition of sewage, self-purification of streams
<b>C605.3</b>	An ability to perform basic design of the unit operations and processes that are used in sewage treatment
<b>C605.4</b>	Understand the standard methods for disposal of sewage
<b>C605.5</b>	Gain knowledge on sludge treatment and disposal
<b>C606/ CE8001 Ground Improvement Techniques</b>	
<b>C606.1</b>	To understand basics of Automobile Engineering, conversant with drive train and transmission.
<b>C606.2</b>	To make the student conversant with Axles, Steering System & Tyre Wheel assembly and to understand basic and types of steering system
<b>C606.3</b>	To make the student conversant with Suspension and Brake System
<b>C606.4</b>	To make the student conversant with Vehicle Performance & Safety also able to understand basics of Vehicle maintenance.
<b>C606.5</b>	To make the student conversant with Vehicle Maintenance & Garage Practice also able to perform garage practices
<b>C607/ CE8611- Highway Engineering Laboratory</b>	
<b>C607.1</b>	To learn the principles and procedures of testing of highway materials
<b>C607.2</b>	Techniques to characterize various test on aggregates
<b>C607.3</b>	Techniques to characterize various test on bitumen
<b>C607.4</b>	Techniques to characterize various tests on bituminous mixes
<b>C607.5</b>	Demonstration of any one field testing equipment like skid resistance tester/ Benkelman beam etc.
<b>C608/ CE8612- Irrigation and Environmental Engineering Drawing</b>	
<b>C608.1</b>	Student shall conceive, design and draw the irrigation and environmental engineering structures in detail showing the plan, elevation and Sections
<b>C608.2</b>	Course will be able to design and draw various units of Municipal water treatment



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	plants
<b>C608.3</b>	Course will be able to design and draw various units of sewage treatment plants
<b>C608.4</b>	Design principles irrigation engineering
<b>C608.5</b>	Design principles environmental engineering
<b>C609/HS8581-PROFESSIONAL COMMUNICATION</b>	
<b>C609.1</b>	Take international examination such as IELTS and TOEFL
<b>C609.2</b>	Participate in Group Discussion.
<b>C609.3</b>	Successfully answer questions in Interviews.
<b>C609.4</b>	Make effective Presentations.
<b>C609.5</b>	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : IV/VII</b>	
<b>C701/ CE8701- Estimation, Costing and Valuation Engineering</b>	
<b>C701.1</b>	Estimate the quantities for buildings
<b>C701.2</b>	Rate Analysis for all Building works, canals, and Roads and Cost Estimate
<b>C701.3</b>	Understand types of specifications, principles for report preparation, tender notices types
<b>C701.4</b>	Gain knowledge on types of contracts
<b>C701.5</b>	Evaluate valuation for building and land
<b>C702/ CE8702- Railways, Airports, Docks and Harbor Engineering</b>	
<b>C702.1</b>	Understand the methods of route alignment and design elements in Railway Planning and Constructions
<b>C702.2</b>	Understand the Construction techniques and Maintenance of Tracklaying and Railway stations
<b>C702.3</b>	Gain an insight on the planning and site selection of Airport Planning and design
<b>C702.4</b>	Analyze and design the elements for orientation of runways and passenger facility systems
<b>C702.5</b>	Understand the various features in Harbors and Ports, their construction, coastal protection works and coastal Regulations to be adopted
<b>C703/ CE8703- Structural Design and Drawing</b>	



  
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C703.1	Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls
C703.2	Design and draw flat slab as per code provisions
C703.3	Design and draw reinforced concrete and steel bridges
C703.4	Design and draw reinforced concrete and steel water tanks
C703.5	Design and detail the various steel trusses and gantry girders
<b>C704/ CE87111 Creative and Innovative Project</b>	
C704.1	Acquire knowledge in Civil Engineering to do a mini project
C704.2	Familiarize with designs, fabrication or algorithms
C704.3	Design buildings expressing their ideas in a novelway
C704.4	To identify a topic of interest in their course of study
C704.5	Carryout the design / fabrication or develop computer code
<b>C705/ CE8007 Traffic Engineering and Management</b>	
C705.1	Overview of Traffic engineering, traffic regulation, management and traffic safety with integrated approach
C705.2	Analyze traffic problems and plan for traffic systems various uses
C705.3	Design Channels, Intersections, signals and parking arrangements
C705.4	Develop Traffic management Systems
C705.5	Implement Intelligent Transport System for traffic management, enforcement and education
<b>C706/ CE8712 INDUSTRIAL TRAINING</b>	
C706.1	To train the students in field work so as to have a firsthand knowledge of practical problems in carrying out engineering tasks
C706.2	To develop skills in facing and solving the field problems
C706.3	To undertake training in reputed civil engineering companies for the specified duration
C706.4	To implement the intricacies of textbook knowledge into practice
C706.5	To apply the concepts of developments and implementation of new techniques
<b>C707/ GE8076- Professional Ethics in Engineering</b>	
C707.1	Simulate the dynamic system by using MAT lab software.



  
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<b>C707.2</b>	Simulate the mechanism by using multi-body dynamic software
<b>C707.3</b>	Analyze the stresses for trusses and beams using analysis software
<b>C707.4</b>	Analyze the stresses for axis-symmetric components by using analysis software
<b>C707.5</b>	Analyze the response of vibrating system analysis software
<b>YEAR/SEMESTER : IV/VIII</b>	
<b>C801/ CE8020- Maintenance, Repair and Rehabilitation of Structures</b>	
<b>C801.1</b>	Understand importance of maintenance and assessment method of distressed structures
<b>C801.2</b>	Analyze the strength and durability properties, their effects due to climate and temperature
<b>C801.3</b>	Gain knowledge in recent development in concrete
<b>C801.4</b>	Assess the techniques for repair and protection methods
<b>C801.5</b>	Apply Repair, rehabilitation and retrofitting of structures and demolition methods
<b>C802/ CE8811- Project work</b>	
<b>C802.1</b>	Identify a topic in advanced areas of Civil Engineering Identify methods and materials to carry out experiments/develop code
<b>C802.2</b>	Review literature to identify gaps and define objectives & scope of the work Reorganize the procedures with a concern for society, environment and ethics
<b>C802.3</b>	Generate and implement innovative ideas for social benefit Analyze and discuss the results to draw valid conclusions
<b>C802.4</b>	Develop a prototypes/models, experimental set-up and software systems necessary to meet the objectives Prepare a report as per recommended format and defend the work
<b>C802.5</b>	Explore the possibility of publishing papers in peer reviewed journals/conference proceedings



  
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES (SEM III – VIII)\_Regulation– 2017 – UG

YEAR/SEMESTER : II/IV	
<b>C301/ MA8351- DISCRETE MATHEMATICS</b>	
C301.1	Rewrite the mathematical statements into logical values.
C301.2	Discuss the discrete structure of combinatorial objects.
C301.3	Solve the recurrence relation with generating functions.
C301.4	Elaborate the basic concepts of Graph theory.
C301.5	Elaborate the concepts of Lattices and Boolean Algebra.
<b>C302 CS8351 Digital Principals and System Design</b>	
C302.1	Apply various techniques to simplify the Boolean functions.
C02.2	Construct different combinational logic circuits for the given specification and model the same using HDL.
C302.3	Construct clocked sequential circuits for the given specification and obtain its HDL
C302.4	Analyze asynchronous sequential circuits using state reduction techniques .
C302.5	Explain the concept of semiconductor memory and programmable logic devices.
<b>C303/ CS8391- DATA STRUCTURES</b>	
C303.1	Explain abstract data types for linked list and its applications.
C303.2	Interpret the concepts of stack, queue and its applications.
C303.3	Understand the types of nonlinear data structure tree
C303.4	Interpret non linear data structure graph and its applications
C303.5	Discuss various sorting and searching techniques in data structures and hashing techniques for Indexing.
<b>C304/ CS8392- OBJECT ORIENTED PROGRAMMING</b>	
C304.1	Explain the basic concepts of Object Oriented Programming and characteristics of Java.
C304.2	Illustrate the concepts of Inheritance and Interface
C304.3	Develop Java Applications using Exceptions and I/O Streams
C304.4	Explain the concepts of Multithreading and Generic Programming
C304.5	Develop Graphical User Interface applications using swings
<b>C305/ EC8395- COMMUNICATION ENGINEERING</b>	
C305.1	Understand the concept of deformation due to different loading conditions.
C305.2	Understand the fundamentals of various stresses and strains in the structural member.
C305.3	Construct the shear force and bending moment diagram for load transferring mechanism in different beams.



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C305.4	Apply the basic equations to design the shaft and helical springs.
C305.5	Determine the slope and deflection in beams using different methods.
<b>C306/ CS8381- DATA STRUCTURES LABORATORY</b>	
C306.1	Implement Stack and Queue using array and Linked List ADT.
C306.2	Implement the applications of stack and queue using C programming.
C306.3	Experiment with various Graph algorithms to find shortest path.
C306.4	Implement sorting and searching algorithms using C Programming.
C306.5	Experiment the collision Technique using Hashing concepts.
<b>C307/ CS8383- OBJECT ORIENTED PROGRAMMING LABORATORY</b>	
C307.1	Develop simple Java applications using classes and packages.
C307.2	Develop Java programs using inheritance and interfaces.
C307.3	Implement exception handling and file concepts.
C307.4	Develop simple application using multithreading and generic programming.
C307.5	Develop event driven programming and applications using java concepts.
<b>C308/ CS8382- DIGITAL SYSTEMS LABORATORY</b>	
C308.1	Exercise the implementation of Boolean theorems, simple combinational circuits using basic logic gates
C308.2	Construct and implement combinational circuits using MSI devices.
C308.3	Examine the operation of sequential circuits like shift register and counters.
C308.4	Simulate the combinational and sequential circuits using HDL.
C308.5	Design simple digital system and validate its performance.
<b>C309/ HS8381- Interpersonal Skills /Listening</b>	
C309.1	Demonstrate listening skill to give information as part of a simple explanation
C309.2	Develop speaking skills to give personal information to express ability and ask for clarification to improve pronunciation.
C309.3	Interpret information and ideas from multiple sources with reasonable accuracy over a wide range of everyday topics.
C309.4	Participate confidently and appropriately in conversations both formal and informal.
C309.5	Make effective presentations and participate in group discussions
<b>C401/ MA8402 Probability and Queuing Theory</b>	
<b>YEAR/SEMESTER : II/IV</b>	
C401.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
C401.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
C401.3	Apply the concept of random processes in engineering disciplines.
C401.4	Acquire skills in analyzing queueing models.
C401.5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner



  
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<b>402/ CS8491 Computer Architecture</b>	
C402.1	Understand the basics structure of computers, operations and instructions.
C402.2	Design arithmetic and logic unit.
C402.3	Understand pipelined execution and design control unit.
C402.4	Understand parallel processing architectures.
C402.5	Understand the various memory systems and I/O communication.
<b>C403/ CS8492 Database Management Systems</b>	
C403.1	Classify the modern and futuristic database applications based on size and complexity
C403.2	Map ER model to Relational model to perform database design effectively
C403.3	Write queries using normalization criteria and optimize queries
C403.4	Compare and contrast various indexing strategies in different database systems
C403.5	Appraise how advanced databases differ from traditional databases.
<b>C404/ CS8451 Design and Analysis of Algorithm</b>	
C404.1	Design algorithms for various computing problems.
C404.2	Analyze the time and space complexity of algorithms.
C404.3	Critically analyze the different algorithm design techniques for a given problem.
C404.4	Modify existing algorithms to improve efficiency.
C404.5	Solve the problems using back tracking and branch and bound techniques.
<b>C405/ CS8493 Operating Systems</b>	
C405.1	Analyze various scheduling algorithms.
C405.2	Understand deadlock, prevention and avoidance algorithms.
C405.3	Understand the functionality of file systems.
C405.4	Perform administrative tasks on Linux Servers.
C405.5	Compare iOS and Android Operating Systems.
<b>C406/ CS8494 Software Engineering</b>	
C406.1	Identify the key activities in managing a software project and compare different process models.
C406.2	Concepts of requirements engineering and Analysis Modeling.
C406.3	Apply systematic procedure for software design and deployment.
C406.4	Compare and contrast the various testing and maintenance.
C406.5	Manage project schedule, estimate project cost and effort required.
<b>C407/ CS8481 Database Management Systems Laboratory</b>	
C407.1	Use typical data definitions and manipulation commands.
C407.2	Design applications to test Nested and Join Queries
C407.3	Implement simple applications that use Views
C407.4	Implement applications that require a Front-end Tool
C407.5	Critically analyze the use of Tables, Views, Functions and Procedures
<b>C408/CS8461 Operating Systems Laboratory</b>	
C408.1	Compare the performance of various CPU Scheduling Algorithms



  
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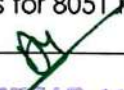
C408.2	Implement Deadlock avoidance and Detection Algorithms
C408.3	Create processes and implement IPC
C408.4	Analyze the performance of the various Page Replacement Algorithms
C408.5	Implement File Organization and File Allocation Strategies
<b>C409/ HS8461 Advanced Reading and Writing</b>	
C409.1	Identify different text types for enhanced reading comprehension.
C409.2	Write a paragraph: topic sentence, supporting sentence, concluding sentence.
C409.3	Writing descriptive, narrative, issue-based, argumentative and analytical types of essays.
C409.4	Organize ideas for E-mail writing and Job application.

<b>YEAR/SEMESTER : III/V</b>	
<b>C501 MA8551 Algebra and Number Theory</b>	
C501.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
C501.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C501.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
C501.4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C501.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
C409.5	Apply critical reading and thinking skills.

<b>C502 CS8591 Computer Networks</b>	
C502.1	Understand the basic layers and its functions in computer networks.
C502.2	Understand the basics of how data flows from one node to another.
C502.3	Analyze and design routing algorithms.
C502.4	Design protocols for various functions in the network.
C502.5	Understand the working of various application layer protocols.

<b>C503 /EC8691 Micro Processor and Micro Controller</b>	
C503.1	Understand the architecture of 8086 and impart the knowledge about the instruction set and addressing mode.
C503.2	Develop assembly level programs and illustrate the system bus structures, multiprocessor configuration of 8086.
C503.3	Illustrate the interfacing methods of various I/O modules for 8086.
C503.4	Acquire knowledge about the architecture, programming of microcontroller 8051.
C503.5	Apply programming and interfacing concepts for 8051 microcontroller based system design.



  
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<b>C504 CS8501 Theory of Computation</b>	
C504.1	Construct automata, regular expression for any pattern.
C504.2	Write Context free grammar for any construct.
C504.3	Design Turing machines for any language.
C504.4	Propose computation solutions using Turing machines.
C504.5	Derive whether a problem is decidable or not.
<b>C505 CS8592 Object Oriented Analysis and Design</b>	
C505.1	Express software design with UML diagrams
C505.2	Design software applications using OO concepts.
C505.3	Identify various scenarios based on software requirements
C505.4	Transform UML based software design into pattern based design using design patterns
C505.5	Understand the various testing methodologies for OO software
<b>C506 EC8681 Micro Processor and Micro Controller Laboratory</b>	
C506.1	Write ALP Programmes for fixed and Floating Point Arithmetic operations
C506.2	Develop source code for the project
C506.3	Interface different I/Os with processor
C506.4	Generate waveforms using Microprocessors
C506.5	Execute Programs in 8051
<b>C507 OMF551 Product Design and Development</b>	
C507.1	Explain the difference between simulator and Emulator
C507.2	Draw UML diagrams for the given project
C507.3	Implement design patterns for the project
C507.4	Develop source code for the project
C307.5	Experiment with various testing techniques in various levels of project
C306.5	Explain the difference between simulator and Emulator
<b>C508 CS8252 Object Oriented Analysis and Design Laboratory</b>	
C508.1	Explain the difference between simulator and Emulator
C508.2	Draw UML diagrams for the given project
C508.3	Implement design patterns for the project
C508.4	Develop source code for the project
C508.5	Experiment with various testing techniques in various levels of project
<b>C509 CS8581 Networks Laboratory</b>	
C509.1	Implement various protocols using TCP and UDP.
C509.2	Compare the performance of different transport layer protocols.
C509.3	Use simulation tools to analyze the performance of various network protocols.
C509.4	Analyze various routing algorithms.
C509.5	Implement error correction codes.
<b>YEAR/SEMESTER : III/VI</b>	
<b>C601/ CS8581 Internet Programming</b>	
C601.1	Construct a basic website using HTML and Cascading Style Sheets.
C601.2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.



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C601.3	Develop server side programs using Servlets and JSP.
C601.4	Construct simple web pages in PHP and to represent data in XML format.
C601.5	Use AJAX and web services to develop interactive web applications
<b>C602/ CS8691 Artificial Intelligence</b>	
C602.1	Use appropriate search algorithms for any AI problem
C602.2	Represent a problem using first order and predicate logic
C602.3	Provide the apt agent strategy to solve a given problem
C602.4	Design software agents to solve a problem
C602.5	Design applications for NLP that use Artificial Intelligence.
<b>C603/CS8601 Mobile Computing</b>	
C603.1	Explain the basics of mobile telecommunication systems
C603.2	Illustrate the generations of telecommunication systems in wireless networks
C603.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
C603.4	Explain the functionality of Transport and Application layers
C603.5	Develop a mobile application using android/blackberry/ios/Windows SDK
<b>C604/ CS8602 Compiler Design</b>	
C604.1	Understand the different phases of compiler.
C604.2	Apply different parsing algorithms to develop the parsers for a given grammar.
C604.3	Understand syntax-directed translation and run-time environment.
C604.4	Learn to implement code optimization techniques and a simple code generator.
C604.5	Design and implement a scanner and a parser using LEX and YACC tools.
<b>C605/ CS8603 Distributed Systems</b>	
C605.1	Elucidate the foundations and issues of distributed systems
C605.2	Understand the various synchronization issues and global state for distributed systems.
C605.3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
C605.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
C605.5	Describe the features of peer-to-peer and distributed shared memory systems
<b>C606/ CS8661 Internet Programming Laboratory</b>	
C606.1	Construct Web pages using HTML/XML and style sheets.
C606.2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
C606.3	Develop dynamic web pages using server side scripting.
C606.4	Use PHP programming to develop web applications.
C606.5	Construct web applications using AJAX and web services.
<b>C607/ CS8662 Mobile Application Development Laboratory</b>	
C607.1	Develop mobile applications using GUI and Layouts..
C607.2	Develop mobile applications using Event Listener.
C607.3	Develop mobile applications using Databases.



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C607.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
C607.5	Analyze and discover own mobile app for simple needs.
<b>C608/ HS8581 Professional Communication</b>	
C608.1	Apply appropriate communication skills across settings, purposes, and audiences.
C608.2	Demonstrate knowledge of communication theory and application.
C608.3	Practice critical thinking to develop innovative and well-founded perspectives related to the students' emphases.
C608.4	Build and maintain healthy and effective relationships. Use technology to communicate effectively in various settings and contexts.
C608.5	Demonstrate appropriate and professional ethical behavior.
<b>YEAR/SEMESTER : IV/VII</b>	
<b>C701 CS8792 Cryptography and Network Security</b>	
C701.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C701.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C701.3	Apply the different cryptographic operations of public key cryptography
C701.4	Apply the various Authentication schemes to simulate different applications.
C701.5	Understand various Security practices and System security standards
<b>C402 CS8791 Cloud Computing</b>	
C702.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
C702.2	Learn the key and enabling technologies that help in the development of cloud.
C702.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
C702.4	Explain the core issues of cloud computing such as resource management and security.
C702.5	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
<b>C703 CS8711 Cloud Computing Laboratory</b>	
C703.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
C703.2	Design and deploy a web application in a PaaS environment.
C703.3	Learn how to simulate a cloud environment to implement new schedulers.
C703.4	Install and use a generic cloud environment that can be used as a private cloud.
C703.5	Manipulate large data sets in a parallel environment.
<b>C704 IT8761 Security Laboratory</b>	
C704.1	Develop code for classical Encryption Techniques to solve the problems.
C704.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
C704.3	Construct code for authentication algorithms.
C704.4	Develop a signature scheme using Digital signature standard.



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C704.5	Demonstrate the network security system using open source tools
<b>C705 OIE751 Robotics</b>	
C705.1	Understand the fundamentals of Robotics
C705.2	Illustrate robot drive system and end efforts
C705.3	Understand the sensors and machine vision
C705.4	Explain kinematics and robot programming
C705.5	Implement Robot economics
<b>C706 MG8591 Principles of Management</b>	
C706.1	Understand the Evolution of Management and organizations
C706.2	Understand the Managerial function like planning
C706.3	Understand the Managerial function like Organizing
C706.4	Understand the Managerial function like Directing
C706.5	Understand the Managerial function like Controlling
<b>C707 CS8091 Big Data Analytics</b>	
C707.1	Work with big data tools and its analysis techniques
C707.2	Analyze data by utilizing clustering and classification algorithms
C707.3	Learn and apply different mining algorithms and recommendation systems for large volumes of data
C707.4	Perform analytics on data streams
C707.5	Learn NoSQL databases and management.
<b>C708 CS8079 Human Computer Interaction</b>	
C708.1	Design effective dialog for HCI
C708.2	Design effective HCI for individuals and persons with disabilities.
C708.3	Assess the importance of user feedback.
C708.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
C708.5	Develop meaningful user interface.
<b>C709/CS8711- Cloud Computing Laboratory</b>	
C709.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
C709.2	Design and deploy a web application in a PaaS environment.
C709.3	Learn how to simulate a cloud environment to implement new schedulers.
C709.4	Install and use a generic cloud environment that can be used as a private cloud.
C709.5	Manipulate large data sets in a parallel environment.
<b>C710/IT8761- Security Laboratory</b>	
C710.1	Develop code for classical Encryption Techniques to solve the problems.
C710.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
C710.3	Construct code for authentication algorithms.
C710.4	Develop a signature scheme using Digital signature standard.
C710.5	Demonstrate the network security system using open source tools
<b>C801/ CS8074 Cyber Forensics</b>	
C801.1	Understand the basics of computer forensics
C801.2	Apply a number of different computer forensic tools to a given scenario



  
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C801.3	Analyze and validate forensics data
C801.4	Identify the vulnerabilities in a given network infrastructure
C801.5	Implement real-world hacking techniques to test system security
<b>C802 CS8078 Green Computing</b>	
C802.1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment
C802.2	Enhance the skill in energy saving practices in their use of hardware.
C802.3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
C802.4	Understand the ways to minimize equipment disposal requirements .
C802.5	Understand and analyze different case studies
<b>C803 /CS8811 Project Work</b>	
C803.1	Identify technically and economically feasible problems of social relevance
C803.2	Plan and build the project team with assigned responsibilities
C803.3	Identify and survey the relevant literature for getting exposed to related solutions
C803.4	Analyse, design and develop adaptable and reusable solutions of minimal complexity by using modern tools
C803.5	Implement and test solutions to trace against the user requirements



  
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES (SEM III – VIII)\_Regulation– 2017 – UG

YEAR/SEMESTER : II/III	
<b>C301/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b>	
<b>C301.1</b>	Analyze Partial Differential Equations in various methods
<b>C301.2</b>	Solving Fourier Series for different types of functions
<b>C301.3</b>	Computing the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions
<b>C301.4</b>	Deduce the Gaussian function in Self reciprocal form using Fourier Transforms
<b>C301.5</b>	Formation of finite difference method in Z-transforms
<b>C302/ EE8351- DIGITAL LOGIC CIRCUITS</b>	
<b>C302.1</b>	Ability to study various number systems and simplify the logical expressions using Boolean functions
<b>C302.2</b>	Ability to design combinational Circuits
<b>C302.3</b>	Ability to design synchronous sequential Circuits
<b>C302.4</b>	Ability to introduce asynchronous sequential circuits and PLDs
<b>C302.5</b>	Ability to introduce digital simulation for development of application oriented logic circuits
<b>C303/ EE8391- ELECTROMAGNETIC THEORY</b>	
<b>C303.1</b>	Ability to understand the basic mathematical concepts related to electromagnetic vector fields
<b>C303.2</b>	Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications



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C303.3	Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications
C303.4	Ability to understand the different methods of emf generation and Maxwell's equations
C303.5	Ability to understand the basic concepts electromagnetic waves and characterizing parameters
<b>C304/ EE8301- ELECTRICAL MACHINES-I</b>	
C304.1	Ability to analyze the magnetic-circuits
C304.2	Ability to acquire the knowledge in constructional details of transformers
C304.3	Ability to understand the concepts of electromechanical energy conversion
C304.4	Ability to acquire the knowledge in working principles of DC Generator
C304.5	Ability to acquire the knowledge in working principles of DC Motor and various losses taking place in D.C. Machines
<b>305/ EE 8353- ELECTRON DEVICES AND CIRCUITS</b>	
C305.1	Explain the structure and working operation of basic electronic devices
C305.2	Able to identify and differentiate both active and passive elements
C305.3	Analyze the characteristics of different electronic devices such as diodes and transistors
C305.4	Choose and adapt the required components to construct an amplifier circuit
C305.5	Employ the acquired knowledge in design and analysis of oscillators
<b>C306/ ME8792- POWER PLANT ENGINEERING</b>	
C306.1	Explain the layout, construction and working of the components inside a thermal



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	power plant
C306.2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants
C306.3	Explain the layout, construction and working of the components inside nuclear power plants
C306.4	Explain the layout, construction and working of the components inside Renewable energy power plants
C306.5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production
<b>C307/ EC8311- ELECTRONICS LABORATORY</b>	
C307.1	Attain skills in different types of diodes and transistor characteristics and its studies
C307.2	Gain skills of using Common Base, Common Collector, and Common Emitter Configurations
C307.3	Explain and design engineering concept of applications related to photo diode, Light activated relay circuits
C307.4	Categorize and comprehend different types of rectifier
C207.5	Capability to form a group and develop or solve Active and passive filter circuits
<b>C308/ EE8311-ELECTRICAL MACHINES LABORATORY-I</b>	
C308.1	Knowledge on performance of DC Shunt and Series Motor
C308.2	Knowledge on the open circuit and load Characteristics of DC generators
C308.3	Acquire skills in testing of transformers
C308.4	Explain and design engineering concept of applications related



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	electromechanical energy conversion
C308.5	Categorize and comprehend different types of DC motor
<b>YEAR/SEMESTER : II/IV</b>	
<b>C401/ MA8491- NUMERICAL METHODS</b>	
C401.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations
C401.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations
C401.3	Apply the numerical techniques of differentiation and integration for engineering problems
C401.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations
C401.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications
<b>C402/ EE8401- ELECTRICAL MACHINES – II</b>	
C402.1	Ability to understand the construction and working principle of Synchronous Generator
C402.2	Ability to acquire knowledge on Synchronous motor
C402.3	Ability to understand the construction and working principle of Three phase Induction Motor
C402.4	Ability to understand the various speed control methods of Three phase Induction Motor
C402.5	Ability to understand the construction and working principle of Special Machines



  
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<b>C403/ EE8402- TRANSMISSION AND DISTRIBUTION</b>	
<b>C403.1</b>	Understand the importance and the functioning of transmission line parameters
<b>C403.2</b>	Acquire knowledge on the performance of Transmission lines
<b>C403.3</b>	Understand the concepts of Lines and Insulators
<b>C403.4</b>	Acquire knowledge on Underground Cables
<b>C403.5</b>	Familiar with the function of different components used in Transmission and Distribution levels of power system and modeling of these components
<b>C404/ EE8403- MEASUREMENTS AND INSTRUMENTATION</b>	
<b>C404.1</b>	Acquire knowledge on Basic functional elements of instrumentation
<b>C404.2</b>	Understand the concepts of Fundamentals of electrical and electronic instruments
<b>C404.3</b>	Ability to compare between various measurement techniques
<b>C404.4</b>	Understand the operational features of storage and display Devices
<b>C404.5</b>	Understand the concepts Various transducers and the data acquisition systems
<b>C405/ EE8451- LINEAR INTEGRATED CIRCUITS AND APPLICATIONS</b>	
<b>C405.1</b>	Ability to acquire knowledge in IC fabrication procedure
<b>C405.2</b>	Ability to analyze the characteristics of Op-Amp
<b>C405.3</b>	To understand the importance of Signal analysis using Op-amp based circuits
<b>C405.4</b>	Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits
<b>C405.5</b>	Ability to understand and analyse, linear integrated circuits their Fabrication and Application



  
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<b>C406/ IC8451- CONTROL SYSTEMS</b>	
<b>C406.1</b>	Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals
<b>C406.2</b>	Ability to do time domain and frequency domain analysis of various models of linear system
<b>C406.3</b>	Ability to interpret characteristics of the system to develop mathematical model
<b>C406.4</b>	Ability to design appropriate compensator for the given specifications
<b>C406.5</b>	Ability to come out with solution for complex control problem
<b>C407/ EE8411- ELECTRICAL MACHINES LABORATORY - II</b>	
<b>C407.1</b>	Ability to understand and analyze EMF and MMF methods
<b>C407.2</b>	Ability to analyze the characteristics of V and Inverted V curves
<b>C407.3</b>	Ability to understand the importance of Synchronous machines
<b>C407.4</b>	Ability to understand the importance of Induction Machines
<b>C407.5</b>	Ability to acquire knowledge on separation of losses
<b>C408/ EE8461- LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY</b>	
<b>C408.1</b>	Ability to understand and implement Boolean Functions
<b>C408.2</b>	Ability to understand the importance of code conversion
<b>C408.3</b>	Ability to Design and implement 4-bit shift registers
<b>C408.4</b>	Ability to acquire knowledge on Application of Op-Amp
<b>C408.5</b>	Ability to Design and implement counters using specific counter IC
<b>C409/EE8412- TECHNICAL SEMINAR</b>	



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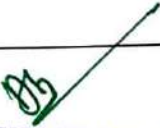
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C409.1	Review, prepare and present technological developments
C409.2	Face the placement interviews
C409.3	Use various teaching aids such as overhead projectors, power point presentation and demonstrative models
C409.4	Present technical reports
C409.5	Ability to acquire knowledge on communication skills development
<b>YEAR/SEMESTER : III/V</b>	
<b>C501/ EE8501- POWER SYSTEM ANALYSIS</b>	
C501.1	Ability to model the power system under steady state operating condition
C501.2	Ability to understand and apply iterative techniques for power flow analysis
C501.3	Ability to model and carry out short circuit studies on power system
C501.4	Ability to acquire knowledge on Fault analysis
C501.5	Ability to model and understand various power system components and carry out power flow, short circuit and stability studies
<b>C502/ EE8551- MICROPROCESSORS AND MICROCONTROLLERS</b>	
C502.1	Ability to acquire knowledge in hardware architecture of 8085 processor
C502.2	Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051
C502.3	Ability to explain the architecture of Microcontroller
C502.4	Ability to understand the importance of Interfacing
C502.5	Ability to write the assembly language programme
<b>C503/ EE8552- POWER ELECTRONICS</b>	



  
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C503.1	Understand basic operation of various power semiconductor devices and passive components
C503.2	Examine and design AC/DC rectifier circuit
C503.3	Investigate and design DC/DC converter circuits
C503.4	Study DC/AC inverter circuit
C503.5	Evaluate and design AC/AC converter circuits
<b>C504/ EE8591- DIGITAL SIGNAL PROCESSING</b>	
C504.1	Ability to acquire knowledge on Signals and systems & their mathematical representation
C504.2	Ability to understand and analyse the discrete time systems
C504.3	Ability to analyse the transformation techniques & their computation
C504.4	Ability to understand the types of filters and their design for digital implementation
C504.5	Ability to acquire knowledge on programmability digital signal processor & quantization effects
<b>C505/ CS8392- OBJECT ORIENTED PROGRAMMING</b>	
C505.1	Develop Java programs using OOP principles
C505.2	Develop Java programs with the concepts inheritance and interfaces
C505.3	Build Java applications using exceptions and I/O streams
C505.4	Develop Java applications with threads and generics classes
C505.5	Develop interactive Java programs using swings
<b>C506/ OAN551- SENSORS AND TRANSDUCERS ( OPEN ELECTIVE-I)</b>	



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C506.1	Expertise in various calibration techniques and signal types for sensors
C506.2	Apply the various sensors in the Automotive and Mechatronics applications
C506.3	Study the basic principles of various smart sensors
C506.4	Implement the DAQ systems with different sensors for real time applications
C506.5	Understand the fundamentals of signal conditioning, data acquisition and communication systems used in mechatronics system development
<b>C507/ EE8511-CONTROL AND INSTRUMENTATION LABORATORY</b>	
C507.1	Ability to understand control theory and apply them to electrical engineering problems
C507.2	Ability to analyze the various types of converters
C507.3	Ability to design compensators
C507.4	Ability to understand the basic concepts of bridge networks and signal conditioning circuits
C507.5	Ability to study the simulation packages
<b>C508/ HS8581- PROFESSIONAL COMMUNICATION</b>	
C508.1	Take international examination such as IELTS and TOEFL
C508.2	Participate in Group Discussion.
C508.3	Successfully answer questions in Interviews.
C508.4	Make effective Presentations.
C508.5	Participate confidently and appropriately in conversations both formal and informal
<b>C509 / CS8383- OBJECT ORIENTED PROGRAMMING LABORATORY</b>	
C509.1	Develop and implement Java programs for simple applications that make use of classes
C509.2	Develop and implement Java programs for simple applications that make use of



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	packages and interfaces.
<b>C509.3</b>	Develop and implement Java programs with array list, exception handling and multi threading
<b>C509.4</b>	Design applications using file processing, generic programming and event handling
<b>C509.5</b>	Develop and implement mini project based on Java programs
<b>YEAR/SEMESTER : III/VI</b>	
<b>C601/ EE8601- SOLID STATE DRIVES</b>	
<b>C601.1</b>	Ability to study about the steady state operation and transient dynamics of a motor load system
<b>C601.2</b>	Ability to analyse the operation of the converter/chopper fed dc drive
<b>C601.3</b>	Ability to analyse the operation and performance of induction motor drives
<b>C601.4</b>	Ability to analyse the operation and performance of synchronous motor drives
<b>C601.5</b>	Ability to analyse and design the current and speed controllers for a closed loop solid state DC motor drive
<b>C602/ EE8602- PROTECTION AND SWITCHGEAR</b>	
<b>C602.1</b>	Ability to analyse the characteristics and functions of relays and protection schemes
<b>C602.2</b>	Ability to understand and analyse Electromagnetic and Static Relays
<b>C602.3</b>	Ability to find the causes of abnormal operating conditions of the apparatus and system
<b>C602.4</b>	Ability to study about the apparatus protection, static and numerical relays



  
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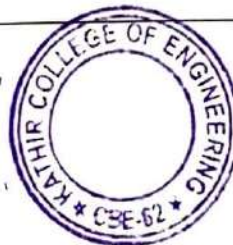


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C602.5	Ability to suggest suitability circuit breaker
<b>C603/ EE8691- EMBEDDED SYSTEMS</b>	
C603.1	Ability to understand and analyse Embedded systems
C603.2	Ability to suggest an embedded system for a given application
C603.3	Ability to operate various Embedded Development Strategies
C603.4	Ability to understand basics of Real time operating system
C603.5	Ability to acquire knowledge on various applications on embedded systems
<b>C604/EE8002-DESIGN OF ELECTRICAL APPARATUS (PROFESSIONAL ELECTIVE-I)</b>	
C604.1	Ability to acquire the Knowledge of Engineering fundamentals to the solutions of magnetic circuits
C604.2	Apply the Knowledge of Engineering fundamentals to the design solutions of transformers
C604.3	Apply the Knowledge of Engineering fundamentals to the design solutions of DC machines
C604.4	Apply the Knowledge of Engineering fundamentals to the design solutions of induction motors
C604.5	Apply the Knowledge of Engineering fundamentals to the design solutions of synchronous machines
<b>C605/ EE8005 - SPECIAL ELECTRICAL MACHINES (PROFESSIONAL ELECTIVE-II)</b>	
C605.1	Ability to acquire the knowledge on construction and operation of stepper motor
C605.2	Ability to construction, principle of operation, switched reluctance motors
C605.3	Ability to acquire the knowledge on construction and operation of permanent



  
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	magnet brushless D.C. motors
C605.4	Ability to acquire the knowledge on construction and operation of permanent magnet synchronous motors
C605.5	Ability to select a special Machine for a particular application
<b>C606/ EE8661- POWER ELECTRONICS AND DRIVES LABORATORY</b>	
C606.1	Ability to practice and understand converter and inverter circuits and apply software for engineering problems
C606.2	Ability to experiment about switching characteristics various switches
C606.3	Ability to analyse about AC to DC converter and DC to AC converters
C606.4	Ability to analyse about DC to AC circuits
C606.5	Ability to acquire knowledge on simulation software
<b>C607/ EE8681- MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b>	
C607.1	Ability to understand and apply computing platform and software for engineering problems
C607.2	Ability to programming logics for code conversion
C607.3	Ability to acquire knowledge on A/D and D/A
C607.4	Ability to understand basics of serial communication
C607.5	Ability to understand basics of software simulators
<b>C608/ EE8611- MINI PROJECT</b>	
C608.1	Students are facilitated to probe into technical issues and solve them effectively in a systematic manner
C608.2	By team work students are able to develop professionalism, built self-confidence



  
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	and practice ethical responsibilities
C608.3	Intellectual capability and innovating thinking of the students are ignited
C608.4	Acquire proficiency to prepare and present the project report
C608.5	On Completion of the mini project work students will be in a position to take up their final year project work and find solution by formulating proper methodology
<b>YEAR/SEMESTER : IV/VII</b>	
<b>C701/ EE8701- HIGH VOLTAGE ENGINEERING</b>	
C701.1	Ability to understand Transients in power system
C701.2	Ability to understand Generation and measurement of high voltage
C701.3	Ability to understand High voltage testing
C701.4	Ability to understand various types of over voltages in power system
C701.5	Ability to test power apparatus and insulation coordination
<b>C702/ EE8702- POWER SYSTEM OPERATION AND CONTROL</b>	
C702.1	Ability to understand the day-to-day operation of electric power system
C702.2	Ability to analyse the control actions to be implemented on the system to meet the minute-to-minute variation of system demand
C702.3	Ability to understand the significance of power system operation and control
C702.4	Ability to acquire knowledge on real power-frequency interaction
C702.5	Ability to design SCADA and its application for real time operation
<b>C703/ EE8703- RENEWABLE ENERGY SYSTEMS</b>	
C703.1	Ability to create awareness about renewable Energy Sources and technologies



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C703.2	Ability to get adequate inputs on a variety of issues in harnessing renewable Energy
C703.3	Ability to acquire knowledge about solar energy
C703.4	Ability to understand basics about biomass energy
C703.5	Ability to recognize current and possible future role of renewable energy sources
<b>C704/ OML751 TESTING OF MATERIALS (OPEN ELECTIVE-II)</b>	
C704.1	Understand the various testing standards and materials
C704.2	To understand the various destructive testing methods of materials and its industrial applications
C704.3	To understand the various non-destructive testing methods of materials and its industrial applications
C704.4	Identify suitable testing technique to inspect industrial component
C704.5	Ability to use the different technique and know its applications and limitations
<b>C705/ GE8071- DISASTER MANAGEMENT (PROFESSIONAL ELECTIVE-III)</b>	
C705.1	Ability to get an exposure to disasters, their significance and types
C705.2	Understand the preliminary approaches of Disaster Risk Reduction
C705.3	Understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
C705.4	Ability to analyse the awareness of institutional processes in the country
C705.5	Understand the Disaster damage assessment and management
<b>C706/ GE8077- Total Quality Management (Professional Elective-IV)</b>	
C706.1	Define the need and dimensions of quality in Engineering practice
C706.2	Explain the TQM principles such as leadership, quality plan, customer focus,



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	employee involvement and six sigma concepts
C706.3	Discuss the benchmarking process and various stages of FMEA
C706.4	Describe various tools and techniques of TQM such as QFD, Taguchi quality loss function and TPM
C706.5	Illustrate the need of ISO 9000, QS 9000, ISO 14000 quality system elements, documentation and quality audit
<b>C707/ EE8711- POWER SYSTEM SIMULATION LABORATORY</b>	
C707.1	Ability to understand power system planning and operational studies
C707.2	Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks
C707.3	Ability to analyse the power flow using GS and NR method
C707.4	Ability to find Symmetric and Unsymmetrical fault
C707.5	Ability to understand the economic dispatch
<b>C708/ EE8712- RENEWABLE ENERGY SYSTEMS LABORATORY</b>	
C708.1	Ability to understand and analyse Renewable energy systems
C708.2	Ability to train the students in Renewable Energy Sources and technologies
C708.3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy
C708.4	Ability to recognize current and possible future role of Renewable energy sources
C708.5	Ability to understand basics of Intelligent Controllers
<b>YEAR/SEMESTER : IV/VIII</b>	
<b>C801/ MG8591-PRINCIPLES OF MANAGEMENT (Professional Elective- V)</b>	



  
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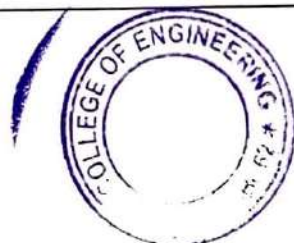


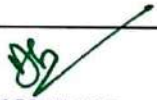
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C801.1	Explain the managerial roles in local and global organization, environmental factors & Strategies for International business.
C801.2	Ability to understand basics of planning process, tools and techniques
C801.3	Illustrate the different organization structure to recognize the human resources planning and management
C801.4	Demonstrate the creativity, innovation and leadership styles through the principles of effective communication and organization culture
C801.5	Explain the process of control authority, budget preparation, productivity measurement and planning operations in management
<b>C802/ EI8073- BIOMEDICAL INSTRUMENTATION (PROFESSIONAL ELECTIVE- VI)</b>	
C802.1	Ability to understand the philosophy of the heart, lung, blood circulation and respiration system
C802.2	Ability to provide latest ideas on devices of non-electrical devices
C802.3	Ability to gain knowledge on various sensing and measurement devices of electrical origin
C802.4	Ability to bring out the important and modern methods of imaging techniques and their analysis
C802.5	Ability to explain the medical assistance/techniques, robotic and therapeutic equipments
<b>C803/ EE8811-PROJECT WORK</b>	
C803.1	Capable to apply the fundamental knowledge of Electrical and Electronics Engineering in developing novel products/solutions and thereby contributing to society



  
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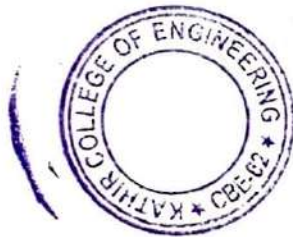



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C803.2	Intellectual capability and innovating thinking of the students are ignited
C803.3	Determine and capable to adapt in a group so that they can communicate among themselves thereby sharpen their leadership skills to do their project work
C803.4	Students become capable of designing and developing system prototypes independently by utilizing latest software's and equipment's
C803.5	Explore the possibility of publishing papers in peer reviewed journals/conference proceedings



  
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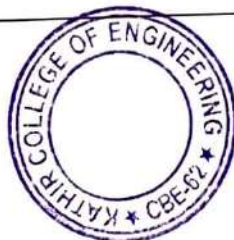



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C303.5	Design the regulated power supply, troubleshoot and analyze the faults in power supplies.
<b>C304/ EC8352 - SIGNALS AND SYSTEMS</b>	
C304.1	Analyze the various properties of signals and systems.
C304.2	Apply Laplace transform and Fourier transform in signal analysis
C304.3	Analyse linear time invariant continuous time systems using Laplace and Fourier Transforms
C304.4	Analyze discrete time signals using Z transform and DTFT.
C304.5	Interpret the linear time invariant discrete time systems using Z transform and DTFT.
<b>C305/ EC8392 - DIGITAL ELECTRONICS</b>	
C305.1	Apply the concepts of digital electronics in the present contemporary world.
C305.2	Design and implement various combinational digital circuits using logic gates.
C305.3	Analysis and design synchronous sequential circuits.
C305.4	Design and implement asynchronous sequential circuits.
C305.5	Apply the concepts of memory devices and programmable logic devices in Integrated Circuits
<b>C306/ EC8391 - CONTROL SYSTEMS ENGINEERING</b>	
C306.1	Perform modeling of control system using various techniques.
C306.2	Obtain the time response and steady state error of control systems.
C306.3	Design various compensators and to analyse the frequency response of the system using various plots.
C306.4	Determine the stability of control systems.
C306.5	Analyze and obtain state space model using state variables
<b>C307/ EC8381- FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY</b>	
C307.1	Develop C programs for simple applications making use of basic constructs.



  
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C307.2	Apply basic data structures for a given problem using C.
C307.3	Implement linear and non-linear data structures using C.
C307.4	Implement functions and recursive functions in C.
C207.5	Choose appropriate searching, sorting and hashing algorithm for an application and implement it in a modularized way.
<b>C308/ EC8361- ANALOG AND DIGITAL CIRCUITS LABORATORY</b>	
C308.1	Plot the frequency response of CE, CB, CC & CS amplifiers.
C308.2	Measure CMRR in differential amplifier.
C308.3	Analyse the limitation in bandwidth of single stage and multistage amplifiers.
C308.4	Simulate the amplifiers using SPICE tool.
C308.5	Design and implement combinational and sequential logic circuits.
<b>C309/ HS8381- INTERPERSONAL SKILLS /LISTENING</b>	
C309.1	Speak effectively on various academic topics and respond to questions.
C309.2	Converse effectively with the use of conversation starters and discourse markers.
C309.3	Listen and respond to various academic dialogues and discussions.
C309.4	Participate confidently and appropriately in informal and formal conversations and group discussions
C309.5	Use a range of presentation tools like PPT, Videos, and Charts etc. to make an engaging presentation.
<b>YEAR/SEMESTER : II/IV</b>	
<b>C401/ MA8451- PROBABILITY AND RANDOM PROCESSES</b>	
C401.1	Use the fundamental knowledge of the concepts of probability and standard Distributions which can describe real life phenomenon.
C401.2	Apply the basic concepts of one and two dimensional random variables in engineering applications.
C401.3	Apply the concept random processes in engineering disciplines.



  
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C401.4	Apply the concept of correlation and spectral densities.
C401.5	Analyze the response of random inputs to linear time invariant systems.
<b>C402/ EC8452-Electronic Circuits II</b>	
C402.1	Analyze the concepts of Feedback Amplifiers in various applications
C402.2	Design different types of Oscillator at different frequencies.
C402.3	Analyze the performance of Tuned amplifiers
C402.4	Design Pulse circuits and Multi-vibrators
C402.5	Apply the various design techniques to analyze Power Amplifiers and DC Convertors
<b>C403/ EC8491- COMMUNICATION THEORY</b>	
C403.1	Analyze the various modulation techniques used for communication.
C403.2	Elaborate the angle modulation and demodulation techniques.
C403.3	Apply the concepts of Random Process.
C403.4	Analyze the noise performance of AM and FM systems.
C403.5	Design applications using the various types of sampling and quantization
<b>C404/ EC8451- ELECTROMAGNETIC FIELDS</b>	
C404.1	Apply the basic mathematical concepts of vector analysis.
C404.2	Describe the laws associated to static electric field and the properties of conductors and dielectrics.
C404.3	Analyze the field potentials due to static magnetic fields and explain how materials affect electric and magnetic fields.
C404.4	Analyze the relation between the fields under time varying situations and apply Maxwell's equations to electric and magnetic fields.
C404.5	Explain electromagnetic wave propagation in lossy and in lossless media.
<b>C405/ EC8453- LINEAR INTEGRATED CIRCUITS</b>	
C405.1	Design linear and non-linear applications of op-amps.



  
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C405.2	Design applications using Analog multipliers and PLL.
C405.3	Design ADC and DAC using op-amps.
C405.4	Design waveform Generators using op-amps.
C405.5	Analyze special function ICs.
<b>C406/ GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	
C406.1	Summarize the importance of environment, biodiversity, ecosystem and how to solve environmental related problems.
C406.2	Describe the causes, effect and control measures of air pollution, water pollution, soil pollution, noise pollution, radioactive pollution and thermal pollution with their relevant case studies.
C406.3	Discuss the various renewable and non-renewable resources and energy conservation processes.
C406.4	Explain the social issues and solutions for sustainable environment with relevant Acts and case studies.
C406.5	Review the impact of human population in the environment and its remedial measures.
<b>C407/ EC8461- CIRCUITS DESIGN AND SIMULATION LABORATORY</b>	
C407.1	Differentiate feedback amplifiers with oscillators
C407.2	Calculate the frequency response & the output impedance for various types of feedback amplifiers
C407.3	Design different types of RC, LC oscillators and tuned amplifiers.
C407.4	Analyze the various types of wave-shaping circuits and multi-vibrators.
C407.5	Simulate oscillators, tuned amplifiers and power amplifiers using SPICE tool
<b>C408/ EC8462- LINEAR INTEGRATED CIRCUITS LABORATORY</b>	
C408.1	Analyze the basics of linear integrated circuits and available ICs.
C408.2	Design the oscillators, amplifiers and filters using operational amplifiers.
C408.3	Analyze and implement the frequency multiplier using PLL.



  
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C408.4	Design DC power supply using ICs.
C408.5	Analyze the performance of filters, Multivibrators, A/D converters and analog multiplier using SPICE.
<b>YEAR/SEMESTER : III/V</b>	
<b>C501/ EC8501- DIGITAL COMMUNICATION</b>	
C501.1	Design applications using the various source coding techniques.
C501.2	Interpret the various waveform coding schemes and their representation.
C501.3	Analyze the various baseband transmission schemes.
C501.4	Develop applications using the various band pass signaling schemes.
C501.5	Apply the basic concepts of channel coding techniques
<b>C502/ EC8553- DISCRETE-TIME SIGNAL PROCESSING</b>	
C502.1	Apply DFT for the analysis of digital signals & systems.
C502.2	Design Infinite Impulse response (IIR) digital filters.
C502.3	Design Finite Impulse response (FIR) digital filters.
C502.4	Analyze the finite Word length effects in digital filters.
C502.5	Explain the functionalities and architecture of DSP processors.
<b>C503/ EC8552 - COMPUTER ARCHITECTURE AND ORGANIZATION</b>	
C503.1	Analyze the performance of the computer system and understand the different instructions formats in MIPS architecture.
C503.2	Illustrate the internals of arithmetic and logic units for fixed point and floating point operations.
C503.3	Describe the purposes of data path and control path, pipeline for execution of instructions and its hazards.
C503.4	Explain the various memory organizations with its performances, internal communications methodologies for I/O devices.
C503.5	Interpret the various parallel processing architectures, principles and their challenges.



  
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<b>C504/ EC8551- COMMUNICATION NETWORKS</b>	
<b>C504.1</b>	Describe the concepts of the network fundamentals and different layers.
<b>C504.2</b>	Identify the components required to build different types of networks and internet working protocols.
<b>C504.3</b>	Apply the concept of various protocols in routing and multicasting.
<b>C504.4</b>	Explain the flow of information from one node to another in the networks.
<b>C504.5</b>	Analyze the operations of various application layer protocols such as WWW, HTTP, and DNS.
<b>C505/ EC6504- MEDICAL ELECTRONICS</b>	
<b>C505.1</b>	Explain about the physiological parameters and recording methods
<b>C505.2</b>	Analyze the bio-chemicals and various physiological information
<b>C505.3</b>	Describe various assist devices used in hospitals.
<b>C505.4</b>	Explain the equipment used for physical medicine and the various recently developed diagnostic and therapeutic techniques.
<b>C505.5</b>	Apply the concepts of medical Instrumentation in recent technology (Radio pill, Telemedicine, Endo microscopy unit).
<b>C506/ ORO551- RENEWABLE ENERGY RESOURCES</b>	
<b>C506.1</b>	Explain the physics of solar radiation
<b>C506.2</b>	Discuss the classification of solar energy collectors and methodologies of storing solar energy.
<b>C506.3</b>	Illustrate the concepts of solar energy utilization in a useful way and applications of solar energy.
<b>C506.4</b>	Describe the concepts in wind energy and biomass with its economic aspects.
<b>C506.5</b>	Analyze in capturing and applying other forms of energy sources like geothermal, Wave, Tidal, OTEC, mini-hydel energies
<b>C507/ EC8562- DIGITAL SIGNAL PROCESSING LABORATORY</b>	



  
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C507.1	Generate various signals using MATLAB and DSP processor
C507.2	Implement Linear and circular convolution programs and Frequency Analysis using DFT in MATLAB
C507.3	Implement Auto correlation and Cross Correlation using MATLAB
C507.4	Design FIR and IIR Filters using MATLAB and DSP Processor
C507.5	Analyze the architecture of a DSP Processor and to implement Up-sampling and Down-sampling operation in DSP Processor
<b>C508/ EC8561- COMMUNICATION SYSTEMS LABORATORY</b>	
C508.1	Analyze the effects of sampling and TDM
C508.2	Design AM & FM modulation and demodulation
C508.3	Implement Pulse Code Modulation and Delta Modulation
C508.4	Implement the signal constellations of Digital Modulation schemes
C508.5	Implement various Error control coding schemes
<b>C509/ EC8563 - COMMUNICATION NETWORKS LABORATORY</b>	
C509.1	Perform client-server communication between two desktop computers using Socket Programming
C509.2	Implement the different protocols.
C509.3	Simulate various network topologies like Star, Bus and Ring.
C509.4	Implement and compare the different routing algorithms.
C509.5	Simulate the algorithms with the help of Network Simulator tool.
<b>YEAR/SEMESTER : III/VI</b>	
<b>C601/ EC8691- MICROPROCESSORS AND MICROCONTROLLERS</b>	
C601.1	Describe the architecture of microprocessor 8086 and execute programs based on 8086 microprocessor.



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C601.2	Explain about design aspects of I/O and Memory Interfacing circuits.
C601.3	Interface 8086 microprocessors with supporting chips.
C6014	Describe the architecture of microcontroller 8051.
C601.5	Implement 8051 microcontroller based systems.
<b>C602/ EC8095- VLSI DESIGN</b>	
C602.1	Realize the concepts of digital building blocks using MOS transistor.
C602.2	Design combinational MOS circuits and power strategies.
C602.3	Design and construct Sequential Circuits and Timing systems.
C602.4	Design arithmetic building blocks and memory subsystems.
C602.5	Apply and implement FPGA design flow and testing.
<b>C603/ EC8652 - WIRELESS COMMUNICATION</b>	
C603.1	Elaborate the characteristics of a wireless channel and evolve the system design specifications
C603.2	Apply the various cellular concepts like frequency reuse, channel assignments, Hand-off strategies etc., in mobile communication.
C603.3	Analyze the performance of various digital signaling schemes of fading channels.
C603.4	Apply the multipath mitigation techniques based on the application.
C603.5	Implement the concept of transmit/receive diversity in MIMO systems.
<b>C604/ MG8591 - PRINCIPLES OF MANAGEMENT</b>	
C604.1	Discuss the evolution of management, functions and roles of managers.
C604.2	Explain the different types of planning process and tools used for planning.
C604.3	Elaborate different organization structures and functions of human resources manager.
C604.4	Interpret the concepts in motivation techniques, leadership and communication processes



  
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<b>C604.5</b>	Describe the control techniques and the role of technology in management.
<b>C605/ EC8651- TRANSMISSION LINES AND RF SYSTEMS</b>	
<b>C605.1</b>	Analyze the various types of transmission lines and the losses associated.
<b>C605.2</b>	Analyze different parameters and constraints in high frequency transmission of information.
<b>C605.3</b>	Analyze impedance matching by stubs using smith charts.
<b>C605.4</b>	Analyze the characteristics of TE and TM waves in Guided systems.
<b>C605.5</b>	Design a RF transceiver system for wireless communication.
<b>C606/ EC8004- WIRELESS NETWORKS</b>	
<b>C606.1</b>	Analyze different standards used for Wireless LAN.
<b>C606.2</b>	Apply the concepts of Network Layer protocols used for Mobile Applications.
<b>C606.3</b>	Apply the suitable network depending on the availability and requirement.
<b>C606.4</b>	Implement different type of applications for smart phones and mobile devices with latest network strategies.
<b>C606.5</b>	Converse with the latest 3G/4G and Wi-MAX networks and its architecture.
<b>C607/ EC8681- MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b>	
<b>C607.1</b>	Write ALP programmes for arithmetic operation, logical operations and data movement using 8086 microprocessor instructions.
<b>C607.2</b>	Implement ALP programmes for code conversion, decimal arithmetic and matrix operations using 8086 instructions.
<b>C607.3</b>	Generate result for floating point operations, string manipulations, sorting, Searching, Password checking, Print RAM size, System Date, Counters and Time Delay using 8086 microprocessor and MASM software.
<b>C607.4</b>	Design 8086/8051 based systems using peripherals and interfaces.
<b>C607.5</b>	Calculate outputs for arithmetic operation, logical operation, square of a number and cube of a number using 8051 microcontroller/MASAM software.



  
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<b>C608/ EC8661- VLSI DESIGN LABORATORY</b>	
<b>C608.1</b>	Write HDL code for basic as well as advanced digital integrated circuits.
<b>C608.2</b>	Synthesize, Place and Route the digital circuits
<b>C608.3</b>	Import the logic modules in to FPGA boards.
<b>C608.4</b>	Design, Simulate and Extract the layouts of the digital circuits using EDA platforms.
<b>C608.5</b>	Design and Simulate the analog circuits using EDA platforms.
<b>C609/ EC8611- TECHNICAL SEMINAR</b>	
<b>C609.1</b>	Explain the significance of learning recent advancement in electrical and electronics engineering discipline.
<b>C609.2</b>	Review and prepare the State-of-art technologies in the present technological developments.
<b>C609.3</b>	Organize the presentation using the concepts of ordering and determining the central, main and supporting ideas.
<b>C609.4</b>	Present any topic in any recent advancement with good communicative skill in front of peers and faculty members.
<b>C609.5</b>	Perform well in placement recruitment drive with good technical skills and communication skills.
<b>C610/ HS8581- PROFESSIONAL COMMUNICATION</b>	
<b>C610.1</b>	Exhibit soft skills and awareness of different cultures in varied contexts.
<b>C610.2</b>	Make effective presentations.
<b>C610.3</b>	Participate confidently in Group Discussions.
<b>C610.4</b>	Attend job interviews and be successful in them.
<b>C610.5</b>	Set short-term and long-term career goals.
<b>YEAR/SEMESTER : IV/VII</b>	
<b>C701/ EC8701- ANTENNAS AND MICROWAVE ENGINEERING</b>	
<b>C701.1</b>	Analyze the basic antenna parameters and link power budget



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<b>C701.2</b>	Describe the design and radiation mechanism of various types of antennas.
<b>C701.3</b>	Explain about the various kinds of antenna arrays.
<b>C701.4</b>	Explain the basic concept of various microwave devices
<b>C701.5</b>	Design a microwave system for the given application.
<b>C702/ EC8751- OPTICAL COMMUNICATION</b>	
<b>C702.1</b>	Apply the fundamental concept of optical fiber modes and their configurations.
<b>C702.2</b>	Analyze the various signal degradation factors associated with optical fiber.
<b>C702.3</b>	Explain the Various optical sources and optical detectors and their use in the optical communication system.
<b>C702.4</b>	Apply the techniques required to measure the optical fiber systems based on the applications.
<b>C702.5</b>	Analyze the Digital Transmission and its associated parameters on system performance
<b>C703/ EC8791- Embedded and Real Time Systems</b>	
<b>C703.1</b>	Explain the fundamental concepts of designing and the computing required for Embedded Systems.
<b>C703.2</b>	Describe the architecture and programming of ARM processor.
<b>C703.3</b>	Apply the programming concepts in embedded system.
<b>C703.4</b>	Analyze the techniques required for creating Real Time Embedded Systems.
<b>C703.5</b>	Apply the concepts of scheduling in Real Time Operating System and creating the model for Real Time applications.
<b>C704/ EC8702 - AD HOC AND WIRELESS SENSOR NETWORKS</b>	
<b>C704.1</b>	Explain the Basics of Adhoc networks and Wireless Sensor Networks
<b>C704.2</b>	Apply suitable routing algorithm based on network and user requirement
<b>C704.3</b>	Identify appropriate physical and MAC Layer protocols



  
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C704.4	Describe the transport layer and security issues possible in wireless sensor networks
C704.5	Apply sensor network platforms and tools for various applications.
<b>C705/ EC8092 - ADVANCED WIRELESS COMMUNICATION</b>	
C705.1	Understand basic principles of capacity of wireless channels.
C705.2	Acquire knowledge about various propagation methods.
C705.3	Understand and apply schemes for space time block codes.
C705.4	Understand and apply various methods for space time trellis codes.
C705.5	Understand basic concepts of layered space time codes.
<b>C706/ OIE751- ROBOTICS</b>	
C706.1	Explain the concepts of industrial robots, classification, specifications and coordinate systems. Also summarize the need and application of robots indifferent sectors.
C706.2	Illustrate the different types of robot drive systems as well as robot end effectors.
C706.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.
C706.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
C706.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.
<b>C707/ EC8711- EMBEDDED LABORATORY</b>	
C707.1	Write programs in ARM for a specific Application.
C707.2	Interface memory with ARM processor and write a program related to memory operations.
C707.3	Interface A/D and D/A convertors with ARM system.
C707.4	Analyze the performance of interrupt.
C707.5	Write programs for interfacing keyboard, display, motor and sensor.
<b>C708/ EC8761- ADVANCED COMMUNICATION LABORATORY</b>	



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C708.1	Analyze the performance of simple optical link by measurement of losses
C708.2	Analyze the mode characteristics of fiber, eye pattern and the impact on BER
C708.3	Estimate the wireless channel characteristics and analyze the performance of wireless communication system
C708.4	Understand the intricacies in microwave system design and analyze the characteristics of Directional Couplers, Isolators, Circulators
C708.5	Understand the characteristics of Gunn diode and Microwave IC filter
<b>YEAR/SEMESTER : IV/VIII</b>	
<b>C801/ GE8076- PROFESSIONAL ETHICS IN ENGINEERING</b>	
C801.1	Apply ethics, morals and human values in society
C801.2	Explain about engineering ethics
C801.3	Describe the responsibilities of engineers as experimenters
C801.4	Analyze the safety, risks, risk benefit analysis and rights of an engineer
C801.5	Discuss the importance of the global issues, moral leadership and code of conduct
<b>C802/ CS8086- SOFT COMPUTING</b>	
C802.1	Develop intelligent systems leveraging the paradigm of soft computing techniques.
C802.2	Implement, evaluate and compare solutions by various soft computing approaches for finding the optimal solutions.
C802.3	Recognize the feasibility of applying a soft computing methodology for a particular problem
C802.4	Design the methodology to solve optimization problems using fuzzy logic, genetic algorithms and neural networks.
C802.5	Design hybrid system to revise the principles of soft computing in various applications
<b>C803/ EC8811- PROJECT WORK</b>	
C803.1	Apply the fundamental knowledge and skills, which are acquired within the technical-area, to a given problem



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<b>C803.2</b>	<ul style="list-style-type: none"><li>Identify and summarize an appropriate list of literature review, analyze previous researchers' work and relate them to the project</li><li>Within given constraints, even with limited information, the students will be able to independently analyze and discuss complex inquiries/problems and handle larger problems on the advanced level within the technical area.</li></ul>
<b>C803.3</b>	Design engineering solutions to complex problems in a systematic approach.  Identify and apply appropriate parameters, assumptions and design criteria in consideration of health and safety (example: the use of codes of practice), ethics, economics, environment, sustainability
<b>C803.4</b>	Apply research and conduct experiments, as well as to analyze and interpret data that yield the results and answer important applicable research questions.
<b>C803.5</b>	Utilize technology tools for communication, collaboration, information management, and decision support.
<b>C803.6</b>	Demonstrate the knowledge, skills and attitudes of a professional engineer.
<b>C803.7</b>	Interact with team members in a professional manner, respecting differences, to ensure a collaborative project environment.
<b>C803.8</b>	Demonstrate a strong working knowledge of ethics and professional responsibility.
<b>C803.9</b>	Document and present one's own work, for a given target group, with strict requirements on structure, format, and language usage.
<b>C803.10</b>	Present the project outlining the approach and expected results using good oral and written presentation skills.
<b>C803.11</b>	Demonstrate effective organizational leadership and change skills for managing projects and project teams
<b>C803.12</b>	Recognize the need for life-long learning by undergoing the project work.



  
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## DEPARTMENT OF MECHANICAL ENGINEERING COURSE OUTCOMES (SEM III – VIII)\_Regulation– 2017 – UG

YEAR/SEMESTER : II/III	
<b>C301/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b>	
C301.1	Analyze Partial Differential Equations in various methods.
C301.2	Solving Fourier Series for different types of functions.
C301.3	Computing the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions
C301.4	Deduce the Gaussian function in Self reciprocal form using Fourier Transforms.
C301.5	Formation of finite difference method in Z-transforms.
<b>C302/ME8391-ENGINEERING THERMODYNAMICS</b>	
C302.1	Apply the basic concepts of thermodynamics for energy conversion phenomenon.
C302.2	Calculate thermal efficiency and coefficient of performance for heat engines, refrigerators and heat pumps.
C302.3	Evaluate the performance of steam power cycles.
C302.4	Derive simple thermodynamic relations of ideal and real gases.
C302.5	Calculate the properties of air vapor mixtures using psychometrics
<b>C303/CE8394-FLUID MECHANICS AND MACHINERY</b>	
C303.1	Apply the concept of fluid properties with their effects on fluid flow.
C303.2	Apply the concepts of general energy equations in fluid flow problems.
C303.3	Calculate the major and minor losses in flow through pipes.
C303.4	Apply the mathematical knowledge in boundary layer concepts.
C303.5	Understand the working principle of pumps and turbines.
<b>C304/ME8351-MANUFACTURING TECHNOLOGY - I</b>	
C304.1	Understand the fundamentals of casting, Welding, Forging and Sheet metal process



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C304.2	Understand the basic concepts of Fusion and Non-Fusion Welding process
C304.3	Identify the different defects which occur in welding and casting process.
C304.4	Explain the various forming operations can performed in sheet metal process
C304.5	Compute the casting allowances and time taken for solidification in the process
<b>C305/EE8353-ELECTRICAL DRIVES AND CONTROLS</b>	
C305.1	Select the rating and classes of duty of machines for particular application.
C305.2	Explain the mechanical and braking characteristics of dc and ac machines.
C305.3	Describe the starting methods of both dc and ac machines.
C305.4	Clarify conventional and solid state speed control of dc drives.
C305.5	Enlighten the speed control of dc and ac drive by conventional and solid state methods.
<b>C306/ME8361-MANUFACTURING TECHNOLOGY LABORATORY - I</b>	
C306.1	Perform the taper turning operation in conventional lathe machine
C306.2	Perform the various thread operations for the given specification.
C306.3	Estimate the taper angle and machining time calculations in various machining operations.
C306.4	Perform the hexagonal bolts and square studs using shaper machine
C306.5	Calculate the eccentricity value to produce eccentric components
<b>C307/ME8381-COMPUTER AIDED MACHINE DRAWING</b>	
C307.1	Construct the machine drawing as per standards, Fits and Tolerances
C307.2	Identify proper computer graphics techniques for 2D drawing and 3D model.
C307.3	Develop the part model for any machine components by using modeling software.
C307.4	Develop the assembly model for machine components by using modeling software.
C207.5	Develop the program code for CNC machines for simulation
<b>C308/EE8361-ELECTRICAL ENGINEERING LABORATORY</b>	
C308.1	Perform the load test, OCC, load characteristics and speed control of DC shunt and DC series motor



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C308.2	Perform the load test, OC and SC test on a single phase transformer
C308.3	Examine the regulation of an alternator by EMF and MMF methods
C308.4	Conduct the load test, speed control on various phase of induction motor
C308.5	Explore the DC and AC starters
<b>C309/HS8381-INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b>	
C309.1	Take international examination such as IELTS and TOEFL
C309.2	Participate in Group Discussion.
C309.3	Successfully answer questions in Interviews.
C309.4	Make effective Presentations.
C309.5	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : II/IV</b>	
<b>C401/MA8452-STATISTICS AND NUMERICAL METHODS</b>	
C401.1	Define null and alternative hypothesis, Apply test statistic, level of significance and decision rule.
C401.2	Explain the concept of analysis of variance to Distinguish between one and two factor analysis of variance tests.
C401.3	Solve Algebraic and Transcendental equations by various methods, Simultaneous linear equations using Direct and Indirect methods.
C401.4	Interpret the data for Interpolation using various methods and compute the Numerical differentiation for Equal & Unequal intervals.
C401.5	Solving first order differential equations using various types of single and multi step methods.
<b>C402/ME8492-KINEMATICS OF MACHINERY</b>	
C402.1	Understand the various kinematic concepts in different mechanisms.
C402.2	Analyze the velocity and acceleration of links at any point in various mechanisms.
C402.3	Construct the various cam profiles with follower motion.
C402.4	Solve the problems on gear and gear trains
C402.5	Recognize the effect of friction in different friction drives.
<b>C403/ME8451-MANUFACTURING TECHNOLOGY- II</b>	



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C403.1	Understand the constructional features of lathe and special machines
C403.2	Explain the various mechanism used in special machines
C403.3	Develop the part program in CNC milling and turning centers.
C403.4	Compute the tool nomenclature and tool life calculation in metal cutting process
C403.5	Select the suitable grinding wheels used in different grinding process
<b>C404/ME8491-ENGINEERING METALLURGY</b>	
C404.1	Describe the various phase diagram for engineering metals
C404.2	Identify the different types of engineering materials in industrial applications
C404.3	Understand the various isothermal transformation in heat treatment process
C404.4	Understand the effects of alloying elements on Ferrous and Non-Ferrous materials.
C404.5	Discuss the properties and applications of Polymers, Ceramics and Composite Materials
<b>C405/ME8395-STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS</b>	
C405.1	Understand the concept of deformation due to different loading conditions.
C405.2	Understand the fundamentals of various stresses and strains in the structural member.
C405.3	Construct the shear force and bending moment diagram for load transferring mechanism in different beams.
C405.4	Apply the basic equations to design the shaft and helical springs.
C405.5	Determine the slope and deflection in beams using different methods.
<b>C406/ME8493-THERMAL ENGINEERING-I</b>	
C406.1	Calculate the efficiency of various gas power cycles.
C406.2	Compute the performance test on IC engines
C406.3	Estimate the concert of single and multi stage steam turbines
C406.4	Apply the thermodynamic concepts in various thermal systems.
C406.5	Calculate the properties of air vapor mixtures using psychometrics
<b>C407/ME8462-MANUFACTURING TECHNOLOGY LABORATORY-II</b>	
C407.1	Calculate the various cutting forces using tool dynamometers.



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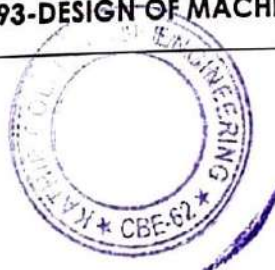


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C407.2	Generate gears using gear hobbling machines
C407.3	Perform surface finish operations using surface grinding and cylindrical grinding machines.
C407.4	Develop CNC part programming for turning and milling operations
C407.5	Perform contour milling operation in various milling machine.
<b>C408/CE8381-STRENGTH OF MATERIALS &amp; FLUID MECHANICS AND MACHINERY LABORATORY</b>	
C408.1	Determine the elastic constants by using tensile and torsion test machine for mild steel (MS) specimen
C408.2	Conduct hardness test for different metals and carry out impact test for MS specimen
C408.3	Determine deflection in beams
C408.4	Determine the discharge coefficients for venturimeter & Orifice meter
C408.5	Analyze the flow measurement by using flow measuring equipment
<b>C409/HS8461-ADVANCED READING AND WRITING</b>	
C409.1	Make effective Presentations.
C409.2	Participate in Group Discussion.
C409.3	Successfully answer questions in Interviews.
C409.4	Take international examination such as IELTS and TOEFL
C409.5	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : III/V</b>	
<b>C501/ME8595-THERMAL ENGINEERING-II</b>	
C501.1	Understand the basic design parameters of various machine elements
C501.2	Understand the various stresses induced due to different loading conditions.
C501.3	Apply the basic design procedure to design the shafts, bearing and couplings.
C501.4	Apply the basic design steps to design the temporary and permanent joints.
C501.5	Design the various energy storing elements and engine components.
<b>C502/ME8593-DESIGN OF MACHINE ELEMENTS</b>	



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C502.1	Understand the basic laws of heat transfer in the engineering systems.
C502.2	Compute the temperature distribution in steady and unsteady state heat conduction.
C502.3	Evaluate the heat transfer coefficient for convection
C502.4	Calculate the phase change properties and the heat exchanger performance by varying the methods
C502.5	Calculate radiation heat transfer between black and gray body surfaces.
<b>C503/ME8501-METROLOGY AND MEASUREMENTS</b>	
C503.1	Discuss the concepts of measurements in metrological instruments.
C503.2	Explain the principles of linear and angular measuring instruments for industrial applications.
C503.3	Understand the concepts of various computer aided inspection tools.
C503.4	Explain the different form measurements in industry.
C503.5	Understand the basic concepts of interchangeability and selective assembly.
<b>C504/ME8594-DYNAMICS OF MACHINES</b>	
C504.1	Understand the various force-motion relationships in different mechanisms
C504.2	Apply the principles of statics and dynamics to machinery
C504.3	Analyze the balancing masses in the rotating and reciprocating machines
C504.4	Solve the free vibration problems in longitudinal, transverse and torsional systems
C504.5	Apply the basic principles to reduce the undesirable effects of forced vibrations
<b>C505/OIM552-LEAN MANUFACTURING (Open Elective-1)</b>	
C505.1	Understand the concept of conventional manufacturing and Lean manufacturing
C505.2	Understand the cellular manufacturing theory, and uses of Lean production tools such as JIT, Kuban & TPM
C505.3	Apply the 'set up time' reduction principles and implementation of TQM & 5S Principles
C505.4	Analyze the statistical consideration, variability reduction and design of experiment using SIC-ZIGMA implementation



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C505.5	Understand the waste in any process, minimize waste through proper kaizens and other methods
<b>C506/ME8511-KINEMATICS AND DYNAMICS LABORATORY</b>	
C506.1	Understand the concept of differential gear trains and kinematic links
C506.2	Evaluate the frequency of the vibrating system
C506.3	Analyze the controlling mechanisms
C506.4	Analyze the balancing masses in the rotating and reciprocating machines
C506.5	Determination of mass moment of inertia for different component
<b>C507/ME8512-THERMAL ENGINEERING LABORATORY</b>	
C507.1	Conduct a test to find thermal conductivity of various engineering materials
C507.2	Measure the heat transfer rate in natural and forced convection environment
C507.3	Evaluate radiation heat transfer between black body surfaces and grey body surfaces
C507.4	Analyze the effectiveness of parallel and counter flow heat exchanger
C507.5	Compare the performance of theoretical and experimental refrigeration and air conditioning systems.
<b>C508/ME8513-METROLOGY AND MEASUREMENTS LABORATORY</b>	
C508.1	Ability to handle different measurement tools and perform measurements in quality Impulsion
C508.2	Identify various gauges for measurement.
C508.3	Demonstrate linear and angular measurement using precision instruments.
C508.4	Apply the load cell to measure the force and torque
C508.5	Use thermocouple and comparator for taking measurement.
<b>YEAR/SEMESTER : III/VI</b>	
<b>C601/ME8651-DESIGN OF TRANSMISSION SYSTEMS</b>	
C601.1	Select the materials for mechanical transmission system.
C601.2	Apply the design knowledge to design the various flexible drives.



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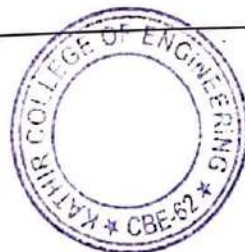


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C601.3	Apply the design concepts to design the parallel axis mating gear.
C601.4	Apply the basic design steps to design the perpendicular and oblique axis mating gear.
C601.5	Apply the design procedure to design the gear box and on various friction drives.
<b>C602/ME8691-COMPUTER AIDED DESIGN AND MANUFACTURING</b>	
C602.1	Understand the concept of 2D and 3D transformations and clipping algorithm.
C602.2	Understand the fundamentals of parametric curves, surfaces and Solids
C602.3	Apply the visual realism by using different algorithm
C602.4	Apply the mass property calculations on different parts
C602.5	Understand the different types of CAD Standards.
<b>C603/ME8693-HEAT AND MASS TRANSFER</b>	
C603.1	Understand the basic laws of heat transfer in the engineering systems.
C603.2	Compute the temperature distribution in steady and unsteady state heat conduction.
C603.3	Evaluate the heat transfer coefficient for convection
C603.4	Calculate the phase change properties and the heat exchanger performance by varying the methods
C603.5	Calculate radiation heat transfer between black and gray body surfaces.
<b>C604/ME8692-FINITE ELEMENT ANALYSIS</b>	
C604.1	Solve Boundary value problems in structural and non-structural application.
C604.2	Apply finite element methods in one dimensional Problem.
C604.3	Solve dynamic problem by using finite element procedure.
C604.4	Apply finite element technique in two dimensional scalar Problems.
C604.5	Apply finite element method in two dimensional Vector problems.
<b>C605/ME8694-HYDRAULICS AND PNEUMATICS</b>	
C605.1	Explain the Fluid power and operation of different types of pumps.
C605.2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves



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C605.3	Explain the different types of Hydraulic circuits and systems
C605.4	Explain the working of different pneumatic circuits and systems
C605.5	Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.
<b>C606/ME8091-AUTOMOBILE ENGINEERING (Professional Elective-1)</b>	
C606.1	To understand basics of Automobile Engineering, conversant with drive train and transmission.
C606.2	To make the student conversant with Axles, Steering System & Tyre Wheel assembly and to understand basic and types of steering system
C606.3	To make the student conversant with Suspension and Brake System
C606.4	To make the student conversant with Vehicle Performance & Safety also able to understand basics of Vehicle maintenance.
C606.5	To make the student conversant with Vehicle Maintenance & Garage Practice also able to perform garage practices
<b>C607/ME8681-C.A.D. / C.A.M. LABORATORY</b>	
C607.1	Construct the machine drawing as per standards, Fits and Tolerances
C607.2	Identify proper computer graphics techniques for 2D drawing and 3D model.
C607.3	Develop the part model for any machine components by using modeling software.
C607.4	Develop the assembly model for machine components by using modeling software.
C607.5	Develop the program code for CNC machines for simulation
<b>C608/ME8682-DESIGN AND FABRICATION PROJECT</b>	
C608.1	Identify problems with their technical skills
C608.2	Design a product as per requirement
C608.3	Develop the detailed drawing for fabrication product with latest tool
C608.4	Create prototype of a working model
C608.5	Contribute effectively as an individual and as a member in a team
<b>C609/HS8581-PROFESSIONAL COMMUNICATION</b>	
C609.1	Take international examination such as IELTS and TOEFL
C609.2	Participate in Group Discussion.



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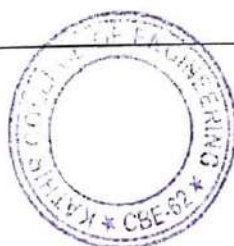


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C609.3	Successfully answer questions in Interviews.
C609.4	Make effective Presentations.
C609.5	Participate confidently and appropriately in conversations both formal and informal
<b>YEAR/SEMESTER : IV/VII</b>	
<b>C701/ME8792-POWER PLANT ENGINEERING</b>	
C701.1	Understand the layout and components of various power plants
C701.2	Understand different types of cycles and it's efficiencies in various power plants.
C701.3	Understand the sources and concepts of renewable energy
C701.4	Calculate the factors associated with power plant economics.
C701.5	Select the suitability of site for a power plant.
<b>C702/ME8793-PROCESS PLANNING AND COST ESTIMATION</b>	
C702.1	Introduce the process planning concepts to make cost estimation for various products after process planning
C702.2	Identify the documents required for the process planning
C702.3	Calculate the material cost of a product.
C702.4	Explain the various associated in manufacturing shops.
C702.5	Calculate the machining time for various machining operations.
<b>C703/ME8791-MECHATRONICS</b>	
C703.1	Explain mechatronics design process
C703.2	Choose sensors based on their working principle.
C703.3	Discuss the working of various actuators.
C703.4	Discuss the architecture of microprocessors and microcontroller.
C703.5	Explain the architecture of PLC and contrast it from PC and relay systems.
<b>C704/OIE751 ROBOTICS (Open Elective-2)</b>	
C704.1	To develop the student's knowledge in various robot structures and their workspace
C704.2	To develop student's skills in performing spatial transformations associated with rigid body motions



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C704.3	To develop student's skills in perform kinematics analysis of robot systems
C704.4	To provide the student with knowledge of the singularity issues associated with the operation of robotic systems
C704.5	To provide the student with some knowledge and analysis skills associated with trajectory planning
<b>C705/ME8073 UNCONVENTIONAL MACHINING PROCESSES (Professional Elective-2)</b>	
C705.1	Explain the need for unconventional machining processes and its classification
C705.2	Compare various thermal energy and electrical energy based unconventional machining processes
C705.3	Summarize various chemical and electro-chemical energy based unconventional machining processes.
C705.4	Explain various nano abrasives based unconventional machining processes.
C705.5	Distinguish various recent trends based unconventional machining processes.
<b>C706/ME8097 NON DESTRUCTIVE TESTING AND EVALUATION(Professional Elective-3)</b>	
C706.1	The student shall be able to select an appropriate NDT technique as per requirement
C706.2	The student shall be able to set various process parameters and control the NDT process for the desired output parameters
C706.3	The student shall be able to find the internal flaws in the material by NDT and take measures to eliminate them
C706.4	The student shall be able to solve various problems encountered like leakage, cracks, blowholes etc with the manufacturing process by analyzing the data.
C706.5	The student shall be competent enough to make use of modern tools and softwares for analyzing and solving real life problems
<b>C707/ME8711-SIMULATION AND ANALYSIS LABORATORY</b>	
C707.1	Simulate the dynamic system by using MAT lab software.
C707.2	Simulate the mechanism by using multi-body dynamic software
C707.3	Analyze the stresses for trusses and beams using analysis software
C707.4	Analyze the stresses for axis-symmetric components by using analysis software
C707.5	Analyze the response of vibrating system analysis software



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<b>C708/ME8781-MECHATRONICS LABORATORY</b>	
<b>C708.1</b>	Simulate Hydraulic, Pneumatic circuit using software tool.
<b>C708.2</b>	Simulate Electro pneumatic circuits using trainer kits.
<b>C708.3</b>	Design and test various fluid power circuits using software tool
<b>C708.4</b>	Interface stepper motor with 8051micro controller
<b>C708.5</b>	Conduct experiments using servo controller and stepper motor.
<b>C709/ME8712-TECHNICAL SEMINAR</b>	
<b>C709.1</b>	Enrich the communication skills of the student technical topics of interest
<b>C709.2</b>	Familiarize the preparation of content of technical writing
<b>C709.3</b>	Enrich the presentations skills of the student technical topics of interest
<b>C709.4</b>	Participate confidently and appropriately in conversations both formal and informal
<b>C709.5</b>	Participate in technical group discussion.
<b>YEAR/SEMESTER : IV/VIII</b>	
<b>C801/ME8591-PRINCIPLES OF MANAGEMENT</b>	
<b>C801.1</b>	Identifies the global context for taking managerial organization.
<b>C801.2</b>	Predict the global opportunity that will impact the management of an organization.
<b>C801.3</b>	Prepare the management principles into management practices.
<b>C801.4</b>	Analyze the managerial problem with ethical practice standards.
<b>C801.5</b>	Breakdown the managerial task executed in the variety of circumstances.
<b>C802/IE8693-PRODUCTION PLANNING AND CONTROL (Professional Elective- IV)</b>	
<b>C802.1</b>	Understand the production planning processes to convert the raw material into finished product.
<b>C802.2</b>	Prepare the production planning activities chart for work study to reduce the production time.
<b>C802.3</b>	Improve the market sale of existing product by changing the product planning
<b>C802.4</b>	Select the suitable process planning for manufacturing of a product.
<b>C802.5</b>	Analyze the production schedule for the given product.



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C803/ME8811-PROJECT WORK	
C803.1	Identify real world problems of core engineering and related systems
C803.2	Formulate new set of problems
C803.3	Evaluate to obtain solution for problems in mechanical engineering systems
C803.4	Adapt to work as a team for the successful completion of the project
C803.5	Document preparation and communication very clearly

Course Outcome	Programme Outcomes II to IV YEAR SUBJECTS												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
<b>C301/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b>														
C301.1	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C301.2	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C301.3	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C301.4	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C301.5	3	2	3	2	2	-	-	-	-	-	-	2	2	3
<b>C302/ME8391-ENGINEERING THERMODYNAMICS</b>														
C302.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C302.2	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C302.3	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C302.4	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C302.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2
<b>C303/CE8394-FLUID MECHANICS AND MACHINERY</b>														
C303.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C303.2	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C303.3	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C303.4	3	3	2	2	-	-	-	-	-	-	-	-	3	2



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C303.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2
<b>C304/ME8351-MANUFACTURING TECHNOLOGY - I</b>														
C304.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C304.2	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C304.3	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C304.4	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C304.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2
<b>C305/EE8353-ELECTRICAL DRIVES AND CONTROLS</b>														
C305.1	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C305.2	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C305.3	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C305.4	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C305.5	3	2	-	-	-	-	-	-	-	-	-	-	3	3
<b>C306/ME8361-MANUFACTURING TECHNOLOGY LABORATORY - I</b>														
C306.1	3	2	2	-	-	-	-	-	-	-	-	-	3	-
C306.2	3	2	2	-	-	-	-	-	-	-	-	-	3	-
C306.3	3	2	2	-	-	-	-	-	-	-	-	-	3	-
C306.4	3	2	2	-	-	-	-	-	-	-	-	-	3	-
C306.5	3	2	2	-	-	-	-	-	-	-	-	-	3	-
<b>C307/ME8381-COMPUTER AIDED MACHINE DRAWING</b>														
C307.1	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C307.2	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C307.3	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C307.4	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C307.5	3	-	2	-	-	-	-	-	-	-	-	-	3	2
<b>C308/EE8361-ELECTRICAL ENGINEERING LABORATORY</b>														



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C308.1	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C308.2	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C308.3	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C308.4	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C308.5	3	2	-	2	-	-	-	-	-	-	-	-	3	2
<b>C309/HS8381-INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b>														
C309.1	3	2	3	-	-	-	-	-	-	-	-	-	3	2
C309.2	3	2	3	-	-	-	-	-	-	-	-	-	3	2
C309.3	3	2	3	-	-	-	-	-	-	-	-	-	3	2
C309.4	3	2	2	-	-	-	-	-	-	-	-	-	3	2
C309.5	3	2	2	-	-	-	-	-	-	-	-	-	3	-
<b>C401/MA8452-STATISTICS AND NUMERICAL METHODS</b>														
C401.1	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C401.2	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C401.3	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C401.4	3	2	3	2	2	-	-	-	-	-	-	2	2	3
C401.5	3	2	3	2	2	-	-	-	-	-	-	2	2	3
<b>C402/ME8492-KINEMATICS OF MACHINERY</b>														
C402.1	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C402.2	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C402.3	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C402.4	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C402.5	3	3	2	-	-	-	-	-	-	-	-	-	3	2
<b>C403/ME8451-MANUFACTURING TECHNOLOGY- II</b>														
C403.1	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C403.2	3	2	-	-	-	-	-	-	-	-	-	-	3	3



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C403.3	3	2	-	-	-	-	-	-	-	-	-	-	-	3	3
C403.4	3	2	-	-	-	-	-	-	-	-	-	-	-	3	3
C403.5	3	2	-	-	-	-	-	-	-	-	-	-	-	3	3
<b>C404/ME8491-ENGINEERING METALLURGY</b>															
C404.1	3	-	-	-	-	-	-	-	-	-	-	-	-	3	2
C404.2	3	-	-	-	-	-	-	-	-	-	-	-	-	3	2
C404.3	3	-	-	-	-	-	-	-	-	-	-	-	-	3	2
C404.4	3	-	-	-	-	-	-	-	-	-	-	-	-	3	2
C404.5	3	-	-	-	-	-	-	-	-	-	-	-	-	3	2
<b>C405/ME8395-STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS</b>															
C405.1	2	3	-	-	-	-	-	-	-	-	-	-	-	2	-
C405.2	2	3	-	-	-	-	-	-	-	-	-	-	-	2	-
C405.3	2	3	-	-	-	-	-	-	-	-	-	-	-	2	-
C405.4	2	3	-	-	-	-	-	-	-	-	-	-	-	2	-
C405.5	2	3	-	-	-	-	-	-	-	-	-	-	-	2	-
<b>C406/ME8493-THERMAL ENGINEERING-I</b>															
C406.1	3	3	2	-	-	-	2	-	-	-	-	-	-	3	2
C406.2	3	3	2	-	-	-	2	-	-	-	-	-	-	3	2
C406.3	3	3	2	-	-	-	2	-	-	-	-	-	-	3	2
C406.4	3	3	2	-	-	-	2	-	-	-	-	-	-	3	2
C406.5	3	3	2	-	-	-	2	-	-	-	-	-	-	3	2
<b>C407/ME8462-MANUFACTURING TECHNOLOGY LABORATORY-II</b>															
C407.1	3	-	2	-	-	-	-	-	-	-	-	-	-	3	2
C407.2	3	-	2	-	-	-	-	-	-	-	-	-	-	3	2
C407.3	3	-	2	-	-	-	-	-	-	-	-	-	-	3	2
C407.4	3	-	2	-	-	-	-	-	-	-	-	-	-	3	2



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C407.5	3	-	2	-	-	-	-	-	-	-	-	-	3	2
<b>C408/CE8381-STRENGTH OF MATERIALS &amp; FLUID MECHANICS AND MACHINERY LABORATORY</b>														
C408.1	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C408.2	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C408.3	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C408.4	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C408.5	3	2	-	2	-	-	2	-	-	-	-	-	3	2
<b>C409/HS8461-ADVANCED READING AND WRITING</b>														
C409.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C409.2	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C409.3	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C409.4	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C409.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2
<b>C501/ME8595-THERMAL ENGINEERING-II</b>														
C501.1	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C501.2	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C501.3	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C501.4	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C501.5	3	3	2	-	-	-	-	-	-	-	-	-	3	2
<b>C502/ME8593-DESIGN OF MACHINE ELEMENTS</b>														
C502.1	3	3	2	2	-	-	2	-	-	-	-	-	3	2
C502.2	3	3	2	2	-	-	2	-	-	-	-	-	3	2
C502.3	3	3	2	2	-	-	2	-	-	-	-	-	3	2
C502.4	3	3	2	2	-	-	2	-	-	-	-	-	3	2
C502.5	3	3	2	2	-	-	2	-	-	-	-	-	3	2



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C503/ME8501-METROLOGY AND MEASUREMENTS														
C503.1	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C503.2	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C503.3	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C503.4	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C503.5	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C504/ME8594-DYNAMICS OF MACHINES														
C504.1	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C504.2	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C504.3	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C504.4	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C504.5	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C505/OIM552-LEAN MANUFACTURING (Open Elective-1)														
C505.1	3	2	-	-	-	-	-	-	-	-	-	-	2	3
C505.2	3	2	-	-	-	-	-	-	-	-	-	-	2	3
C505.3	3	2	-	-	-	-	-	-	-	-	-	-	2	3
C505.4	3	2	-	-	-	-	-	-	-	-	-	-	2	3
C505.5	3	2	-	-	-	-	-	-	-	-	-	-	2	3
C506/ME8511-KINEMATICS AND DYNAMICS LABORATORY														
C506.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C506.2	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C506.3	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C506.4	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C506.5	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C507/ME8512-THERMAL ENGINEERING LABORATORY														



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C507.1	2	-	-	-	-	-	3	3	-	-	-	-	2	2
C507.2	2	-	-	-	-	-	3	3	-	-	-	-	2	2
C507.3	2	-	-	-	-	-	3	3	-	-	-	-	2	2
C507.4	2	-	-	-	-	-	3	3	-	-	-	-	2	2
C507.5	2	-	-	-	-	-	3	3	-	-	-	-	2	2
<b>C508/ME8513-METROLOGY AND MEASUREMENTS LABORATORY</b>														
C508.1	3	3	-	2	2	-	-	-	-	-	-	-	3	2
C508.2	3	3	-	2	2	-	-	-	-	-	-	-	3	2
C508.3	3	3	-	2	2	-	-	-	-	-	-	-	3	2
C508.4	3	3	-	2	2	-	-	-	-	-	-	-	3	2
C508.5	3	3	-	2	2	-	-	-	-	-	-	-	3	2
<b>C602/ME8691-COMPUTER AIDED DESIGN AND MANUFACTURING</b>														
C602.1	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C602.2	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C602.3	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C602.4	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C602.5	3	2	-	2	-	-	2	-	-	-	-	-	3	2
<b>C603/ME8693-HEAT AND MASS TRANSFER</b>														
C603.1	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C603.2	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C603.3	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C603.4	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C603.5	3	3	3	2	-	-	-	-	-	-	-	-	3	2
<b>C603/ME8692-FINITE ELEMENT ANALYSIS</b>														
C604.1	2	-	-	-	2	-	-	3	-	-	3	-	2	2
C604.2	2	-	-	-	2	-	-	3	-	-	3	-	2	2



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C604.3	2	-	-	-	2	-	-	3	-	-	3	-	2	2
C604.4	2	-	-	-	2	-	-	3	-	-	3	-	2	2
C604.5	2	-	-	-	2	-	-	3	-	-	3	-	2	2
<b>C605/ME8694-HYDRAULICS AND PNEUMATICS</b>														
C605.1	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C605.2	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C605.3	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C605.4	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C605.5	3	-	-	-	-	-	-	-	-	-	-	-	3	2
<b>C606/ME8091-AUTOMOBILE ENGINEERING (Professional Elective-1)</b>														
C606.1	3	3	-	-	-	-	-	-	-	-	-	-	3	2
C606.2	3	3	-	-	-	-	-	-	-	-	-	-	3	2
C606.3	3	3	-	-	-	-	-	-	-	-	-	-	3	2
C606.4	3	3	-	-	-	-	-	-	-	-	-	-	3	2
C606.5	3	3	-	-	-	-	-	-	-	-	-	-	3	2
<b>C607/ME8681-C.A.D. / C.A.M. LABORATORY</b>														
C607.1	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C607.2	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C607.3	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C607.4	3	2	-	-	-	-	-	-	-	-	-	-	3	2
C607.5	3	2	-	-	-	-	-	-	-	-	-	-	3	2
<b>C608/ME8682-DESIGN AND FABRICATION PROJECT</b>														
C608.1	3	3	2	2	2	-	-	-	-	-	-	-	3	2
C608.2	3	3	2	2	2	-	-	-	-	-	-	-	3	2
C608.3	3	3	2	2	2	-	-	-	-	-	-	-	3	2



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C608.4	3	3	2	2	2	-	-	-	-	-	-	-	3	2
C608.5	3	3	2	2	2	-	-	-	-	-	-	-	3	2
<b>C609/HS8581-PROFESSIONAL COMMUNICATION</b>														
C609.1	3	3	3	-	3	-	-	-	-	-	-	-	3	3
C609.2	3	3	3	-	3	-	-	-	-	-	-	-	3	3
C609.3	3	3	3	-	3	-	-	-	-	-	-	-	3	3
C609.4	3	3	3	-	3	-	-	-	-	-	-	-	3	3
C609.5	3	3	3	-	3	-	-	-	-	-	-	-	3	3
<b>C701/ME8792-POWER PLANT ENGINEERING</b>														
C701.1	3	2	-	-	-	-	2	-	-	-	-	-	3	2
C701.2	3	2	-	-	-	-	2	-	-	-	-	-	3	2
C701.3	3	2	-	-	-	-	2	-	-	-	-	-	3	2
C701.4	3	2	-	-	-	-	2	-	-	-	-	-	3	2
C701.5	3	2	-	-	-	-	2	-	-	-	-	-	3	2
<b>C702/ME8793-PROCESS PLANNING AND COST ESTIMATION</b>														
C702.1	3	-	-	-	2	3	2	-	-	-	-	-	3	2
C702.2	3	-	-	-	2	3	2	-	-	-	-	-	3	2
C702.3	3	-	-	-	2	3	2	-	-	-	-	-	3	2
C702.4	3	-	-	-	2	3	2	-	-	-	-	-	3	2
C702.5	3	-	-	-	2	3	2	-	-	-	-	-	3	2
<b>C703/ME8791-MECHATRONICS</b>														
C703.1	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C703.2	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C703.3	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C703.4	3	2	-	2	-	-	-	-	-	-	-	-	3	2
C703.5	3	2	-	2	-	-	-	-	-	-	-	-	3	2



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C704/OIE751 ROBOTICS (Open Elective-2)														
C704.1	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C704.2	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C704.3	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C704.4	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C704.5	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C705/GE 8077 TOTAL QUALITY MANAGEMENT (Professional Elective-2)														
C705.1	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C705.2	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C705.3	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C705.4	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C705.5	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C706/ME8097 NON DESTRUCTIVE TESTING AND EVALUATION (Professional Elective-3)														
C706.1	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C706.2	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C706.3	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C706.4	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C706.5	3	2	-	2	-	-	2	-	-	-	-	-	3	2
C707/ME8711-SIMULATION AND ANALYSIS LABORATORY														
C707.1	2	-	-	-	3	3	3	3	-	3	3	-	2	3
C707.2	2	-	-	-	3	3	3	3	-	3	3	-	2	3
C707.3	2	-	-	-	3	3	3	3	-	3	3	-	2	3
C707.4	2	-	-	-	3	3	3	3	-	3	3	-	2	3
C707.5	2	-	-	-	3	3	3	3	-	3	3	-	2	3
C708/ME8781-MECHATRONICS LABORATORY														



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C708.1	3	3	2	-	-	2	-	-	-	-	-	-	3	2
C708.2	3	3	2	-	-	2	-	-	-	-	-	-	3	2
C708.3	3	3	2	-	-	2	-	-	-	-	-	-	3	2
C708.4	3	3	2	-	-	2	-	-	-	-	-	-	3	2
C708.5	3	3	2	-	-	2	-	-	-	-	-	-	3	2
<b>C709/ME8712-TECHNICAL SEMINAR</b>														
C709.1	3	3	2	2	3	-	-	-	-	-	-	-	3	2
C709.2	3	3	2	2	3	-	-	-	-	-	-	-	3	2
C709.3	3	3	2	2	3	-	-	-	-	-	-	-	3	2
C709.4	3	3	2	2	3	-	-	-	-	-	-	-	3	2
C709.5	3	3	2	2	3	-	-	-	-	-	-	-	3	2
<b>C801/ME8591-PRINCIPLES OF MANAGEMENT</b>														
C801.1	3	2	-	-	-	-	-	-	-	-	2	-	3	2
C801.2	3	2	-	-	-	-	-	-	-	-	2	-	3	2
C801.3	3	2	-	-	-	-	-	-	-	-	2	-	3	2
C801.4	3	2	-	-	-	-	-	-	-	-	2	-	3	2
C801.5	3	2	-	-	-	-	-	-	-	-	2	-	3	2
<b>C802/IE8693-PRODUCTION PLANNING AND CONTROL (Professional Elective- IV)</b>														
C802.1	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C802.2	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C802.3	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C802.4	3	3	2	-	2	-	-	-	-	-	2	-	3	3
C802.5	3	3	2	-	2	-	-	-	-	-	2	-	3	3
<b>C803/ME8811-PROJECT WORK</b>														
C803.1	3	2	2	2	2	-	-	-	-	-	-	-	3	-
C803.2	3	2	2	2	2	-	-	-	-	-	-	-	3	-



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C803.3	3	2	2	2	2	-	-	-	-	-	-	-	3	-
C803.4	3	2	2	2	2	-	-	-	-	-	-	-	3	-
C803.5	3	2	2	2	2	-	-	-	-	-	-	-	3	-

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M.E. – MANUFACTURING ENGINEERING

Regulation – 2017 - PG

YEAR/SEMESTER : I/I	
S.No	Course Outcome
<b>C101/ MA5160-APPLIED PROBABILITY AND STATISTICS</b>	
C101.1	Apply the concept to find moments and moment generating functions of distributions using the definition of a random variable.
C101.2	Find marginal, conditional distribution, statistical average for the standard probability function.
C101.3	For the standard probability function, find the marginal, conditional distribution, statistical average.
C101.4	Find the M.L.E. and fit curves and regression lines using the least squares principle.
C101.5	Small and large samples should be identified, and hypothesis testing should be used.
<b>C102/MF5101-ADVANCES IN MANUFACTURING TECHNOLOGY</b>	
C102.1	To generate useful test results in the machining of a variety of materials.
C102.2	Create hybrid machining techniques using this experience.
C102.3	Use of this experience to solve problems on the shop floor.
C102.4	To gain a better understanding of special machining methods, unconventional machining processes, and micromachining.
C102.5	To gain a better understanding of nano fabrication and rapid prototyping.
<b>C103/MF5102 - COMPUTER INTEGRATED MANUFACTURING SYSTEMS</b>	
C103.1	To achieve useful research results in the field of computer-assisted manufacturing.
C103.2	Make use of your skills to create programming techniques.
C103.3	Use of this expertise to make computer-aided planning more practical
C103.4	For a typical production system, design automated material handling and storage systems.
C103.5	Create a cellular manufacturing device and a manufacturing cell.
<b>C104/MF5103-ADVANCES IN CASTING &amp; WELDING</b>	
C104.1	Understanding of casting style
C104.2	Understanding of casting metallurgy
C104.3	Understanding of current casting and foundry layout patterns



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C104.4	Understanding of welding metallurgy and architecture
C104.5	Understanding of welding most current patterns
<b>C105/ MF5104-METAL CUTTING THEORY AND PRACTICE</b>	
C105.1	Ability to comprehend how material removal processes function.
C105.2	Understanding of the tool nomenclature scheme
C105.3	Understanding of machining thermal dimensions
C105.4	Awareness of tool materials, tool life, and tool wear
C105.5	Understanding of machining wear mechanisms and chatter
<b>C106/ MF5003-MICRO MANUFACTURING (Professional Elective-I)</b>	
C106.1	The aim is to familiarize students with the concepts, basic machine tools, and innovations in the micro manufacturing process, as well as research trends in the field.
C106.2	To disseminate information on micromachining using beam energy.
C106.3	To gain knowledge of the nano polishing process used on micro machined components
C106.4	To gain a better understanding of the micro forming and welding processes
C106.5	To gain a better understanding of the metrology and calculation methods used on micro machined surfaces. to learn about the most current developments in the sector
<b>C107/ MF5111-CAD/CAM LAB</b>	
C107.1	In sketcher mode, create complex geometries of system components.
C107.2	Ability to use modeling software to build 2D and 3D part models.
C107.3	Create complex engineering assemblies using acceptable assembly constraints.
C107.4	Ability to Understand the CNC Control in Modern Manufacturing System.
C107.5	Ability to Prepare CNC Part Programming and Produce
<b>C201/MF5201- OPTIMIZATION TECHNIQUES IN MANUFACTURING</b>	
C201.1	The student has a basic understanding of the history of optimization problems, their formulation, classification, and solutions,application in a variety of engineering fields
C201.2	Ability to approach and solve linear equations in organizational research problems that apply to real-world engineering problems.
C201.3	Ability to approach and solve non-linear equations of operational research problems that are relevant to real-world engineering business problems.
C201.4	Ability to solve various experimental experiments using various optimization methods in order to achieve the best objective function value.
C201.5	The student understands various simulation methods and how to apply them to various experimental experiments in order to achieve the best objective function value.



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<b>C202/CM5251- ADVANCES IN METROLOGY AND INSPECTION</b>	
<b>C202.1</b>	Ability to comprehend metrology principles and measurement errors
<b>C202.2</b>	Understanding of the applications of surface roughness calculation
<b>C202.3</b>	Ability to comprehend the fundamentals of interferometer and its significance.
<b>C202.4</b>	Understanding of measurement devices and laser metrology
<b>C202.5</b>	Image processing capability for metrology
<b>C203/ MF5202-THEORY OF METAL FORMING</b>	
<b>C203.1</b>	Enable students to be exposed to the concepts of plasticity and the representation of stress states in various coordinate systems
<b>C203.2</b>	Understanding of the different bulk forming processes that are used
<b>C203.3</b>	Ability to teach students about the various sheet metal forming processes that are used
<b>C203.4</b>	Awareness of powder metallurgy techniques and special forming processes is transferable.
<b>C203.5</b>	Understanding of surface treatment for different processes
<b>C204/MF5203-TOOLING FOR MANUFACTURING</b>	
<b>C204.1</b>	To achieve practical research results in the form of tool design for various manufacturing processes.
<b>C204.2</b>	Ability to demonstrate how metal removal procedures are carried out using tooling
<b>C204.3</b>	Ability to demonstrate how metal forming processes use tooling
<b>C204.4</b>	To gain a better understanding of the tooling used in metal casting and joining processes
<b>C204.5</b>	To be able to state the state of the art in manufacturing and inspection tooling
<b>C205/ME5009-NON DESTRUCTIVE TESTING &amp; EVALUATION (NDT) (Professional Elective-II)</b>	
<b>C203.1</b>	Be able to List and define different defects that occur in welding shown through Non-Destructive Examination/Destructive Testing.
<b>C203.2</b>	Be able to identify the types of equipment used for each Non-Destructive and Destructive Examination
<b>C203.3</b>	Be able to explain the purpose of the Equipment, Application, and standard Techniques required to perform major non-destructive and destructive examinations of weld
<b>C203.4</b>	Be able to go to specific Code, Standard, or Specification related to each testing method



  
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C203.5	Have the knowledge and essential skills to identify strengths and weaknesses in materials used in fabrication
<b>C204/MF5071-LEAN MANUFACTURING (Professional Elective-III)</b>	
C204.1	The student must have a clear understanding of manufacturing production, classification, and lean manufacturing techniques
C204.2	Understanding of the fundamental concepts of job requirements, 5S, and layouts in production and productive maintenance
C204.3	Ability to comprehend the JIT and Kanban implementation approaches with a pull method
C204.4	Understanding of the Autonomy and Poke Yoke Processes in Lean Implementation
C204.5	The student is familiar with a variety of quality principles as well as a structured planning approach
<b>C205/MF5211-AUTOMATION AND METAL FORMING LABORATORY</b>	
C205.1	Ability to design and implement pneumatic circuits using trainer kits
C205.2	Understanding of metal forming techniques and the evaluation of associated parameters
C205.3	Ability to use hydro-pneumatic software to plan and conduct pneumo-hydraulic circuits
C205.4	Ability to assess and understand material strain hardening
C205.5	Understanding of sheet metal formability and shaping techniques
<b>C206/MF5212-TECHNICAL SEMINAR</b>	
C206.1	Develop reading, writing, comprehension, and presentation skills for research papers
C206.2	To assess the breadth of knowledge and coverage of recent areas of manufacturing engineering research
C206.3	To assess the consistency of presentation content (PPT/OHP) on recent manufacturing engineering research topics
C206.4	To improve the student's communication skills by presenting topics on recent engineering/technology advances
C206.5	To establish an analysis of current research problems and developments
<b>YEAR/SEMESTER : II/III</b>	
<b>C301/MF5014-MANUFACTURING MANAGEMENT (Professional Elective-IV)</b>	
C301.1	The student must have a basic understanding of manufacturing plant layout, classification, and material handling techniques.
C301.2	Understanding of the fundamental concepts of motion economy, as well as the tools and methods used in work studies and measurements



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C301.3	Understanding of process planning and forecasting models is a must
C301.4	Understanding of project management and scheduling methods
C301.5	Personnel management and marketing methods have been studied and understood by the student.
<b>C302/MF5072-RESEARCH METHODOLOGY (Professional Elective-V)</b>	
C302.1	Understand some basic concepts of research and its methodologies
C302.2	Identify appropriate research topics
C302.3	Select and define appropriate research problem and parameters
C302.4	Prepare a project proposal, write a research report and thesis, write a research proposal (grants)
C302.5	organize and conduct research (advanced project) in a more appropriate manner
<b>C303/MF5016-MATERIAL TESTING &amp; CHARACTERIZATION TECHNIQUES (Professional Elective-VI)</b>	
C303.1	To determine the grain size and classify the crystal structure.
C303.2	Students will be able to learn about electron microscopic characterization techniques.
C303.3	Chemical and thermal analysis approaches include the ability to comprehend their working concepts and instrumentation. The characterization analysis must be ciphered
C303.4	The aim of this course is to learn how to perform mechanical testing under static loading and to recognise the various testing codes for metallic and composite materials
C303.5	Mechanical research under complex loading conditions: ability to comprehend
<b>C304/MF5311-PROJECT PHASE - I</b>	
C304.1	Choose a subject in Manufacturing Engineering's advanced areas. Determine how to conduct tests and what materials to use
C304.2	Review the literature to find differences and describe the work's goals and scope
C304.3	Create and incorporate new social-benefit concepts
C304.4	Analyze and explain the findings in order to draw sound conclusions
C304.5	Restructure procedures with a focus on culture, the community, and ethics
<b>YEAR/SEMESTER : II/IV</b>	
<b>C401/MF5411-PROJECT PHASE - II</b>	
C401.1	Determine a subject in advanced Manufacturing Engineering. Determine experimental methods and materials



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<b>C401.2</b>	Review the literature to find differences and describe the work's goals and scope
<b>C401.3</b>	Restructure procedures with a focus on culture, the community, and ethics
<b>C401.4</b>	Create and incorporate new social-benefit concepts
<b>C401.5</b>	Analyze and explain the findings in order to draw sound conclusions



  
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Regulation - 2017 - PG

M.E POWER ELECTRONICS AND DRIVES YEAR/SEMESTER: I/I

S.No	Course Outcome
<b>C101-MA5155/APPLIED MATHEMATICS FOR ELECTRICAL ENGINEERS</b>	
C101.1	Ability to apply the concepts of Linear programming in Electrical Engineering problems.
C101.2	Ability to achieve an understanding of the basic concepts of one dimensional random variables and apply in electrical engineering problems.
C101.3	Ability to familiarize the students in calculus of variations and solve problems using Fourier transforms associated with engineering applications.
C101.4	Ability to understand the matrix theory in electrical engineering problems.
C101.5	Ability to apply the concept of Fourier series in electrical engineering problems.
<b>C102-PX5101/POWER SEMICONDUCTOR DEVICES</b>	
C102.1	Able to improve power semiconductor device structures for adjustable speed motor control applications.
C102.2	Able to understand the static and dynamic characteristics of current controlled power semiconductor devices
C102.3	Able to understand the static and dynamic characteristics of voltage controlled power semiconductor devices
C102.4	Enable the students for the selection of devices for different power electronics applications
C102.5	Able to understand the control and firing circuit for different devices.
<b>C103-PX5151/ANALYSIS OF ELECTRICAL MACHINES</b>	
C103.1	Ability to have knowledge about the fundamentals of magnetic circuits, energy, force and torque of multi-excited systems.
C103.2	Ability to analyze the steady state and dynamic state operation of DC machine through mathematical modeling and simulation in digital computer.



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C103.3	Ability to understand the theory of transformation of three phase variables to two phase variables.
C103.4	Ability to analyze the steady state and dynamic state operation of three-phase induction machines using transformation theory based mathematical modeling.
C103.5	Ability to analyze the steady state and dynamic state operation of three-phase synchronous machines using transformation theory based mathematical modeling
<b>C104-PX5152/ANALYSIS AND DESIGN OF POWER CONVERTERS</b>	
C104.1	Able to understand the electrical circuit concepts behind the different working modes of power converters so as to enable deep understanding of their operation.
C104.2	Able to acquire skills to derive the criteria for the design of power converters starting from basic fundamentals.
C104.3	Able to analyze and comprehend the various operating modes of different configurations of power converters.
C104.4	Able to design different power converters namely AC to DC, DC to DC and AC to AC converters.
C104.5	Ability to analyze the voltage controllers with R and R-L loads.
<b>C105-IN5152/SYSTEM THEORY</b>	
C105.1	Able to understand the fundamentals of physical systems in terms of its linear and nonlinear models.
C105.2	Able to find solution on representing systems in state variable form.
C105.3	Able to analysis on solving linear and non-linear state equations.
C105.4	Able to estimate the properties of linear systems such as controllability and observability.
C105.5	Able to study the stability analysis of systems using Lyapunov's theory.
<b>C106-IN5091/SOFT COMPUTING TECHNIQUES</b>	
C106.1	Able to expose the concepts of feed forward neural networks.
C106.2	Able to provide adequate knowledge about feedback neural networks.
C106.3	Able to teach about the concept of fuzziness involved in various systems.
C106.4	Able to expose the ideas about genetic algorithm.
C106.5	Able to provide adequate knowledge about of FLC and NN toolbox.
<b>C107-PX5111/POWER ELECTRONICS CIRCUITS LABORATORY</b>	



  
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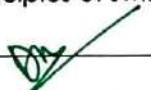
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C107.1	Able to familiar with the digital tools used in generation of gate pulses for the power electronic switches.
C107.2	Able to implementing analog interfacing as well as control circuits used in a closed- loop control for power electronic system.
C107.3	Able to acquire knowledge on mathematical modeling of power electronic circuits and implementing the same using simulation tools.
C107.4	Able to design and fabricate a power converter circuits at appreciable voltage/power levels.
C107.5	Able to develop skills on PCB design and fabrication.
<b>YEAR/SEMESTER: I/II</b>	
<b>C108- PX5201/ANALYSIS AND DESIGN OF INVERTERS</b>	
C108.1	Able to understand the concepts behind the different working modes of inverters so as to enable deep understanding of their operation.
C108.2	Able to acquire skills to derive the criteria for the design of power converters for UPS, Drives etc.,
C108.3	Able to analyze and comprehend the various operating modes of different configurations of power converters.
C108.4	Able to design different single phase and three phase inverters.
C108.5	Able to understand series and parallel resonant inverters.
<b>C109- PX5202/SOLID STATE DRIVES</b>	
C109.1	Able to understand various operating regions of the induction motor drives.
C109.2	Able to study and analyze the operation of VSI & CSI fed induction motor control.
C109.3	Able to understand the speed control of induction motor drive from the rotor side.
C109.4	Able to understand the field oriented control of induction machine.
C109.5	Able to understand the control of synchronous motor drives.
<b>C110- PX5251/SPECIAL ELECTRICAL MACHINES</b>	
C110.1	Able to review the fundamental concepts of permanent magnets and the operation of permanent magnet brushless DC motors.
C110.2	Able to introduce the concepts of permanent magnet brushless synchronous motors and synchronous reluctance motors.
C110.3	Able to develop the control methods and operating principles of switched reluctance motors.



  
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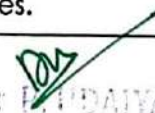
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C110.4	Able to introduce the concepts of stepper motors and its applications.
C110.5	Able to understand the basic concepts of other special machines.
<b>C111-PX5252/POWER QUALITY</b>	
C111.1	Able to understand the various power quality issues.
C111.2	Able to understand the concept of power and power factor in single phase and three phase systems supplying non linear loads
C111.3	Able to understand the conventional compensation techniques used for power factor correction and load voltage regulation.
C111.4	Able to understand the active compensation techniques used for power factor correction.
C111.5	Able to understand the active compensation techniques used for load voltage regulation.
<b>C112-PX5003/FLEXIBLE AC TRANSMISSION SYSTEMS</b>	
C112.1	Able to expose the concepts of feed forward neural networks.
C112.2	Able to provide adequate knowledge about feedback neural networks.
C112.3	Able to teach about the concept of fuzziness involved in various systems.
C112.4	Able to expose the ideas about genetic algorithm.
C112.5	Able to provide adequate knowledge about of FLC and NN toolbox.
<b>C113-PS5071/DISTRIBUTED GENERATION AND MICROGRID</b>	
C113.1	Able to illustrate the concept of distributed generation.
C113.2	Able to analyze the impact of grid integration.
C113.3	Able to understand the concept of Micro grid and its configuration.
C113.4	Able to know the power electronics interfaces in DC and AC microgrids.
C113.5	Able to study the power quality issues in micogrids.
<b>C114-PX5211/ELECTRICAL DRIVES LABORATORY</b>	
C114.1	Able to design and analyze the various DC and AC drives.



  
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<b>C114.2</b>	Able to generate the firing pulses for converters and inverters using digital processors.
<b>C114.3</b>	Able to design of controllers for linear and nonlinear systems.
<b>C114.4</b>	Able to implement of closed loop system using hardware simulation.
<b>C114.5</b>	Able to design Cycloconverter fed Induction motor drives.
<b>C115-PX5212/MINI PROJECT</b>	
<b>C115.1</b>	Able to solve a specific problem right from its identification and literature review till the successful solution of the same.
<b>C115.2</b>	Able to acquire practical knowledge within the chosen area of technology for project development.
<b>C115.3</b>	Able to Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach.
<b>C115.4</b>	Able to contribute as an individual or in a team in development of technical projects.
<b>C115.5</b>	Able to develop effective communication skills for presentation of project related activities.
<b>YEAR/SEMESTER: II/III</b>	
<b>C201-PS5092/SOLAR AND ENERGY STORAGE SYSTEMS</b>	
<b>C201.1</b>	Able to know the characteristics of sunlight and their properties.
<b>C201.2</b>	Able to Study about solar modules and PV system design and their applications.
<b>C201.3</b>	Able to Deal with grid connected PV systems.
<b>C201.4</b>	Able to discuss about different energy storage systems.
<b>C201.5</b>	Able to find out the applications in water pumping, battery chargers and other solar cars etc.,
<b>C202- PX5071/WIND ENERGY CONVERSION SYSTEMS</b>	
<b>C202.1</b>	Able to learn the design and control principles of Wind turbine.
<b>C202.2</b>	Able to understand the concepts of fixed speed and variable speed, wind energy conversion systems.
<b>C202.3</b>	Able to analyze the grid integration issues.



  
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C202.4	Able to understand the concept of variable speed systems.
C202.5	Able to know grid connected systems.
<b>C203-PX5072/POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS</b>	
C203.1	Able to Provide knowledge about the stand alone and grid connected renewable energy systems.
C203.2	Able to equip with required skills to derive the criteria for the design of power converters for renewable energy applications.
C203.3	Able to analyze and comprehend the various operating modes of wind electrical generators and solar energy systems.
C203.4	Able to design different power converters namely AC to DC, DC to DC and AC to AC converters for renewable energy systems.
C203.5	Able to develop maximum power point tracking algorithms.



  
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## MASTER OF COMPUTER SCIENCE AND ENGINEERING

### COURSE OUTCOMES Regulation- 2017 – PG

YEAR/SEMESTER : I/I	
<b>MA5160-Applied Probability and Statistics</b>	
C101.1	Basic probability axioms and rules and the moments of discrete and continuous random variables.
C101.2	Consistency, efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem.
C101.3	Use statistical tests in testing hypotheses on data.
C101.4	Perform exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.
<b>CP5151-Advanced Data Structures and Algorithms</b>	
C102.1	Design data structures and algorithms to solve computing problems
C102.2	Design algorithms using graph structure and various string matching algorithms to solve real-life problems
C102.3	Apply suitable design strategy for problem solving
<b>CP5152-Advanced Computer Architecture</b>	
C103.1	Identify the limitations of ILP.
C103.2	Discuss the issues related to multiprocessing and suggest solutions
C103.3	Point out the salient features of different multicore architectures and how they exploit parallelism
C103.4	Discuss the various techniques used for optimising the cache performance
C103.5	Design hierarchal memory system



  
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C103.6	Point out how data level parallelism is exploited in architectures
<b>CP5153-Operating System Internals</b>	
C104.1	To explain the functionality of a large software system by reading its source.
C104.2	To revise any algorithm present in a system.
C104.3	To design a new algorithm to replace an existing one.
C104.4	To appropriately modify and use the data structures of the linux kernel for a different software system
<b>CP5154-Advanced Software Engineering</b>	
C105.1	Understand the advantages of various Software Development Lifecycle Models
C105.2	Gain knowledge on project management approaches as well as cost and schedule estimation strategies
C105.3	Perform formal analysis on specifications
C105.4	Use UML diagrams for analysis and design
C105.5	Architect and design using architectural styles and design patterns
C105.6	Understand software testing approaches
C105.7	Understand the advantages of DevOps practices
<b>CP5191-Machine Learning Techniques</b>	
C106.1	Distinguish between, supervised, unsupervised and semi-supervised learning
C106.2	Apply the appropriate machine learning strategy for any given problem
C106.3	Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem
C106.4	Design systems that uses the appropriate graph models of machine learning
C106.5	Modify existing machine learning algorithms to improve classification efficiency



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<b>CP5161-Data Structures Laboratory</b>	
C107.1	Design and implement basic and advanced data structures extensively.
C107.2	Design algorithms using graph structures
C107.3	Design and develop efficient algorithms with minimum complexity using design techniques
<b>YEAR/SEMESTER : I/II</b>	
<b>CP5201-Network Design and Technologies</b>	
C208.1	Identify the components required for designing a network
C208.2	Design a network at a high-level using different networking technologies
C208.3	Analyze the various protocols of wireless and cellular networks
<b>CP5291-Security Practices</b>	
C209.1	Understand the core fundamentals of system security
C209.2	Apply the security concepts related to networks in wired and wireless scenario
C209.3	Implement and Manage the security essentials in IT Sector
C209.4	Able to explain the concepts of Cyber Security and encryption Concepts
C209.5	Able to attain a through knowledge in the area of Privacy and Storage security and related Issues.
<b>CP5292-Internet of Things</b>	
C210.1	Analyze various protocols for IoT
C210.2	Develop web services to access/control IoT devices.
C210.3	Design a portable IoT using Raspberry Pi
C210.4	Deploy an IoT application and connect to the cloud.
C210.5	Analyze applications of IoT in real time scenario
<b>CP5293-Big Data Analytics</b>	



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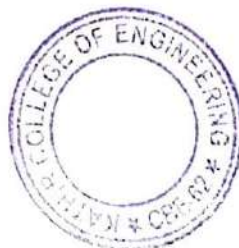


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C211.1	Understand how to leverage the insights from big data analytics
C211.2	Analyze data by utilizing various statistical and data mining approaches
C211.3	Perform analytics on real-time streaming data
C211.4	Understand the various NoSql alternative database models
CP5092 - Cloud Computing Technologies	
C212.1	Employ the concepts of storage virtualization, network virtualization and its management
C212.2	Apply the concept of virtualization in the cloud computing
C212.3	Identify the architecture, infrastructure and delivery models of cloud computing
C212.4	Develop services using Cloud computing
C212.5	Apply the security models in the cloud environment
CP5072 - Software Architectures and Design	
C213.1	Understand the need of software architecture for sustainable dynamic systems
C213.2	Have a sound knowledge on design principles and to apply for large scale systems
C213.3	Design architectures for distributed heterogeneous systems
C213.4	Have good knowledge on service oriented and model driven architectures and the aspect oriented architecture
C213.5	Have a working knowledge to develop appropriate architectures through various case studies
CP5261-Data Analytics Laboratory	
C214.1	Process big data using Hadoop framework
C214.2	Build and apply linear and logistic regression models



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C214.3	Perform data analysis with machine learning methods
C214.4	Perform graphical data analysis
<b>CP5281-Term Paper Writing and Seminar</b>	
C215.1	Identify the Domain Specific Objective
C215.2	Summarize the literature Survey
C215.3	Analyzing different Methodologies
C215.4	Produce Final Draft of the Research Paper
C215.5	Prepare Presentation for the research undergone
<b>YEAR/SEMESTER : II/III</b>	
<b>CP5005 - Software Quality Assurance</b>	
C301.1	Perform functional and nonfunctional tests in the life cycle of the software product
C301.2	Understand system testing and test execution process
C301.3	Identify defect prevention techniques and software quality assurance metrics
C301.4	Apply techniques of quality assurance for typical applications
<b>CP5073 - Embedded Software Development</b>	
C303.1	Understand different architectures of embedded processor, microcontroller and peripheral devices.
C303.2	Work with embedded network environment
C303.3	Understand challenges in Real time operating systems
C303.4	Design and analyze applications on embedded systems
<b>CP5097 - Mobile Application Development</b>	
C302.1	Describe the requirements for mobile applications
C302.2	Explain the challenges in mobile application design and development



  
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C302.3	Develop design for mobile applications for specific requirements.
C302.4	Implement the design using Android SDK.
C302.5	Implement the design using Objective C and iOS.
C302.6	Deploy mobile applications in Android and iPhone marketplace for distribution
<b>CP5311-Project Work Phase – I</b>	
C304.1	Identify the problem by applying acquired knowledge
C304.2	Construct and organize executable project modules through proper designing
C304.3	Choose efficient tools for implementation of the designed modules
C304.4	Analyze and categorize the outcomes of the implementation and derive inferences.
C304.5	Examine the completed task and compile the project report
<b>YEAR/SEMESTER : II/IV</b>	
<b>CP5411-Project Work Phase – II</b>	
C401.1	Plan and construct improved methods for an identified problem by applying acquired knowledge
C402.2	Experiment and Develop effective solutions through proper designing
C401.2	Analyze and categorize the outcomes of the implementation and derive inferences.
C402.3	Assess the acquired outcomes based on evaluation metrics



  
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Master of Business Administration  
COURSE OUTCOMES Regulation- 2017 – PG

YEAR/SEMESTER : I / I	
C101 BA 5101 Economic Analysis for Business	
C101.1	Analyze the basic fundamentals economic problems and the behavior by understanding the basic concepts of micro and macro economies.
C101.2	Understanding of the standard theoretical analysis of consumer and producer behaviour
C101.3	Design competition strategies, and market environment according to the natures of products and the structures of the markets.
C101.4	Integrate the concept of macroeconomic aggregates and output decisions of firms under various national income.
C101.5	Make optimal business decisions by integrating the concepts of Demand and supply of money.
C102 BA5102 Principles Of Management	
C102.1	Evaluate the context for taking managerial actions of planning, organizing and controlling. .
C102.2	Assess situation, including opportunities and threats that will impact management of an organization
C102.3	Integrate management principles into management practices
C102.4	The students should be able to describe and discuss the elements of effective management,



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C102.5	Discuss and apply the planning, organizing and control processes, iii) describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication
<b>C103 BA5103 Accounting For Management</b>	
C103.1	Prepare various costing schedules where an analysis of cost classification, behaviour, and types.
C103.2	Analyze cost-volume-profit techniques to determine optimal managerial decisions.
C103.3	Apply and analyze different types of activity-based management tools through the preparation of estimates
C103.4	Possess a managerial outlook at accounts
C103.5	Acquire a reasonable knowledge in accounts. Analysis and evaluate financial statements.
<b>C104 BA5104 Legal Aspects Of Business</b>	
C104.1	Acquire Basic knowledge and understanding of the principles governing the business organization.
C104.2	Ability to analyze legal issues facing a company with the knowledge gained.
C104.3	Comprehend the key concepts of business law relating to contract formation, the selection of a business organization etc
C104.4	Legal insight will be established in the business practices according to the situation of changing environment
C104.5	Analyse the knowledge of Legal perspective and its practices to improve the business
<b>C105 BA5105 ORGANIZATIONAL BEHAVIOUR</b>	



  
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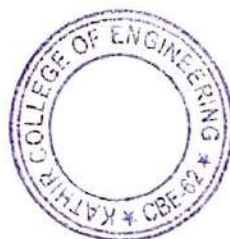



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C105.1	Students will have a better understanding of human behavior in organization. They will know the framework for managing individual and group performance.
C105.2	Analyze how these theories and empirical evidence can help to understand contemporary organizational issues.
C105.3	Apply theories to practical problems in organizations in a critical manner.
C105.4	Comprehend some of the main theories of Organizational Behavior
C105.5	Analyse an overview of theories and practices in organizational behavior in individual, group and organizational level.
<b>C106 BA5106 STATISTICS FOR MANAGEMENT</b>	
C106.1	Have a fundamental knowledge of the basic statistics and probability distribution concepts.
C106.2	Aware of the problem and know how to apply the normal, t-distribution and F-distribution and one-way and two-way analysis of variance for hypothesis testing.
C106.3	Find the application of correlation, regression and time series analysis in various aspects.
C206.4	To facilitate objective solutions in business decision making under subjective conditions
C206.5	Students to solve the problems by understanding the basic concepts and learn the applications of statistics in business decision making.
<b>C107 BA5107 TOTAL QUALITY MANAGEMENT</b>	
C107.1	Apply quality philosophies and tools to facilitate continuous improvement and ensure customer delight.



  
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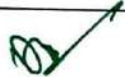
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C107.2	Familiar the principles of total quality management and peculiarities of their implementation
C107.3	Use quality management methods analyzing and solving problems of organization.
C107.4	To use new concepts of TQM Process of continuous improvement and learning
C107.5	To create an awareness of fundamental principles , significance and implementation of quality management.
<b>C108 BA5108 SPOKEN AND WRITTEN COMMUNICATION</b>	
C108.1	Get into the habit of writing regularly.
C108.2	Express themselves in different genres of writing from creative to critical to factual writing.
C108.3	Take part in print and online media communication.
C108.4	Read quite widely to acquire a style of writing
C108.5	Identify their area of strengths and weaknesses in writing
C108.6	Speak confidently with any speakers of English, including native speakers. Speak effortlessly in different contexts – informal and formal
<b>YEAR/SEMESTER : I / II</b>	
<b>C201 BA5201 APPLIED OPERATIONS RESEARCH</b>	
C201.1	Understand and analyze managerial problems in industry so that they are able to use Resources more effectively.
C201.2	Specialized linear programming problems like the transportation and assignment Problems.
C201.3	Understand the applications of basic methods for and challenges in integer programming and the concepts of game theory to know how they are used in modeling and analyzing an interactive situation.



  
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C201.4	Understand the characteristics of different types of decision making environments and The appropriate decision making approaches and tools to be used in each type.
C201.5	Understand basic characteristic features of a queuing system and acquire in analyzing Queuing models and analyzing the problem of replacement when machines, equipment become less effective using the replacement models
<b>C202 BA5202 Business Research Methods</b>	
C202.1	Remembering the types of research, its objectives and how the concept theory plays its role in research.
C202.2	Understanding the different types of research designs, types of validity and various measurement techniques.
C202.3	Knowledge about the various methods of data collection and how sample and sample size could be determined.
C202.4	Possessing the statistical techniques and different analytical methods for research.
C202.5	Knowing the needs and values of ethical research and how it could be implemented in report writing.
<b>C203 BA5203 FINANCIAL MANAGEMENT</b>	
C203.1	Understanding basic concepts of financial management such as decisions and functions of financial management. And to learn meaning and estimations of time value of money, valuation of securities and risk and return of securities.
C203.2	Evaluate long term investments using techniques like payback period, accounting rate of return, net present value, profitability index and internal rate of return and to estimate specific cost of capital and weighted



  
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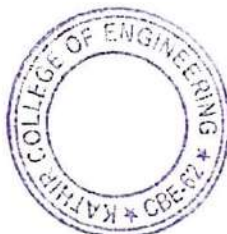


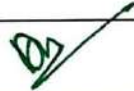
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	average cost of capital.
C203.3	concepts of dividend and examine impact of dividend policy of a firm.
C203.4	Estimate and evaluate different components of working capital such as Receivables, payables, inventory, cash, etc.,
C203.5	Exposure and knowledge of long term sources of fund namely share, debenture, term loans, private equity, venture capital, and so on.
<b>C204 BA5204 Human Resource Management</b>	
C204.1	Knowledge about the evolution of human resource management, its roles, policies and the application of computers in human resource management
C204.2	Understanding the need for human resource requirement and the process of recruitment and selection
C204.3	Knowing the training methods, development programmes and the concepts of knowledge management
C204.4	Insight into the concept of motivation, its theories and techniques and the concept of career management
C204.5	Understanding the necessity of performance evaluation and the importance, process and methods of control system
<b>C205 BA5205 Information Management</b>	
C205.1	Knowledge about the basic concepts of information technology and functional information systems
C205.2	Remembering the tools for system analysis and its Application in information management
C205.3	Familiarity with the database management systems and the concepts like data warehousing and data mart



  
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C205.4	Understanding the need for security, testing process, knowing the concepts of disaster management, computer crimes etc., and ethics in Information technology.
C205.5	Understanding the role of e- commerce in information management and knowledge about data mining and cloud computing
<b>C206 BA5206 Operations Management</b>	
C206.1	Familiarize the basics of operations management, its importance in transformation process, development over years in a system perspective by studying the functions, recent trends, future challenges and to frame strategy to achieve it..
C206.2	Knowing the various quantitative and qualitative forecasting hods and make planning of capacity, facility location, facility yout and operations based on that.
C206.3	Identify the factors to be considered and the various approaches to be followed in designing the product, process and the work; and the method to measure and improve productivity.
C206.4	Understand the need and importance of managing materials by planning and purchasing the right material; and managing the inventory for best output.
C206.5	Knowing various scheduling techniques like PERT and CPM and also the various methods to schedule and manage the projects.
<b>C207 BA5207 Marketing Management</b>	
C207.1	Understanding of ideas and nuances of marketing; Define the business environment and priorities of marketing. And to distinguish the various marketing practices in serving the needs of organizations versus consumer goods and to explain the key core concepts of marketing globally.
C207.2	Formulate and manage the industrial market and consumer arketng strategies including all key components and to understand the basics of service marketing and competitor analysis with Marketing mix.



  
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C207.3	Explain the techniques to conduct market analysis practices including market segmentation and targeting and apply the 4 P's in the industrial and consumer market.
C207.4	Compare and contrast different perspectives that characterize the study of consumer behavior and apply theories and Models of consumer behavior to the formulation of effective marketing strategy.
C207.5	consumer behavior and also to understand the role of Marketing information systems, online marketing and the impact of Ethics in business.
<b>C208 BA5208 Data Analysis and Business Modelling</b>	
C208.1	Determine the aspects of creating spreadsheet, performing calculations, formatting, some very widely used formulas
C208.2	Compute and interpret the results of Bi variate and Multivariate Regression and Correlation Analysis, for forecasting and also perform ANOVA and F-test.
C208.3	Understand the various alternatives available for investment and make sound investment decisions in the context of Analysis
C208.4	Build an understanding of the fundamental concepts of computer networking.
C208.5	Familiarity with the basic protocols of networking Models and how they can be used to assist in network design and implementation.
<b>Year/SEMESTER : II / III</b>	
<b>C301 BA5301 International Business Management</b>	
C301.1	Knowing the nature, factors and advantages of International business and its business Environment.
C301.2	Understanding the roles of GATT/WTO, Regional Trade block and the theories of international trade.
C301.3	Familiarity with the concepts of strategic compulsion, strategic options, controlling of international business and its performance evaluation.



  
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C301.4	Understanding the necessity of make or buy decision, concepts of product development and criteria in selecting and training the expatriate managers.
C301.5	Awareness about the conflict management, the disadvantages and ethical issues of international business.
<b>C302 BA5302 Strategic management</b>	
C302.1	Determine Understanding the conceptual framework, process, objectives and goals of strategic management.
C302.2	Knowing the basic concept of competitive advantage and its impact in external and internal business environment.
C302.3	Analyzing the generic strategic alternatives, corporate strategy, diversification and strategic alliances.
C302.4	Implementing the strategic processes, strategic change, designing organizational structure and the techniques of strategic evaluation and control.
C302.5	Awareness about the strategic issues for non-profit organization and understanding the new business models and strategies for internet economy.
<b>C303 BA5001 Brand Management</b>	
C303.1	Developing a basic understanding of Branding its functions, Significance and various types of brands.
C303.2	Highlighting the strategic issues in branding. And also to study the branding strategies used by companies to compete with foreign brands.
C303.3	Develop hands-on abilities establishing the key foundations of a strong brand image building, brand loyalty programmes, brand promotion, and brand personality
C303.4	Understanding of brand adoption practices and basic issues in brand extensions.
C303.5	Develop critical perspectives in evaluating research in branding and applying them in strategic management of brands in creative industries, traditional and non-traditional tools for measuring brand strength – both qualitative and quantitative measures.:



  
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C304 BA5006 Services Marketing	
C304.1	Familiarize role of services in economy, nature, scope and characteristics, of services marketing, and to understand the issues related to services marketing
C304.2	Analyze the service market potential, to understand the Classification of services and also to understand service market segmentation, targeting and positioning.
C304.3	understand to concept service life cycle and new service development and to construct Service Blue Printing, to analyze service quality of service organization through SERVQUAL and Service Quality function development
C304.4	explain the concept of pricing of services, its methods. To understand the service marketing triangle and Integrated Service marketing communication
C304.5	Apply service marketing strategies for health, Hospitality, Tourism, Financial, Logistics, Educational, Entertainment & public utility Information technique Services .
C305 BA5005 Retail Marketing	
C305.1	Explain the central role of retail in industrialised societies, and the impact of keymarket/retail trends upon this sector in the local and global contexts
C305.2	Identify the key stakeholders and the roles/responsibilities of retail towards these stakeholders
C305.3	Understand and apply appropriate frameworks to develop high level retail marketing strategy, and identify the role of marketing strategies in the building of brand equity and shareholder value in the retail industry



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C305.4	Evaluate the implementation of marketing strategy through the retail mix – including product and merchandise mix, pricing, location and store- design, promotions, and store management - to improve the total customer experience and retailer market competitiveness.
C305.5	Interpret retail problems and be capable of critically evaluating and applying appropriate retail management models and theories to generate strategic and tactical solutions
<b>C306 BA5008 Banking Financial Services Management</b>	
C306.1	Familiarize overview of Indian Banking System, its function, acts governing the function of Indian banking system and the bank financial statement.
C306.2	Price various types of loans and deposits proposed by banks to various prospective Borrowers and depositors respectively.
C306.3	Identify the various risk profiles and evaluate the performance of banks and manage the asset liabilities of the bank.
C306.4	Understand the need and importance of mergers and diversification of bank and the methods to evaluate the performance of banking.
C306.5	Understand e-banking and the threats that go with it.
<b>C307 BA5022 Merchant Banking And Financial Services</b>	
C307.1	Apply corporate finance concepts, principles and theories to the basic financial problems of the industry.
C307.2	Apply best practice tools and methods in investment management to different settings
C307.3	Explain the capital structure and analyze how financing decisions influence firm value.
C307.4	Describe how dividends are paid and explain factors that affect a firm's dividend policy.
C307.5	Evaluate different stakeholders' roles and significance in relation to corporate Governance
<b>C308 BA5012 Security Analysis and Portfolio Management</b>	
C308.1	Understanding the basic environment of Indian financial systems especially investment options and their risk and return.
C308.2	Understanding the mechanism and functioning of primary and secondary markets of capital market and intermediaries



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C308.3	Analyze and predict securities risk and return using fundamental analysis.
C308.4	Skill to predict share price movements and make decisions using different methods of technical analysis
C308.5	Analyze, evaluate and manage portfolio of securities based on various techniques.
<b>309 BA5014 ENTREPRENEURSHIP DEVELOPMENT</b>	
C309.1	Familiarize overview of the competencies, personality traits and characteristics of Entrepreneurs.
C309.2	Understand the Environmental factors affecting entrepreneurship and central and state government policies for SME"s
C309.3	Understand about prefeasibility, feasibility, project preparation for stating a business enterprise.
C309.4	Understand the various functions areas of Management ie Finance Marketing, HR and Operations management.
C309.5	Understand monitoring of business, preventing of sickness, rehabilitation of business Enterprises.
<b>C310 BA5015 INDUSTRIAL RELATIONS AND LABOUR WELFARE</b>	
C310.1	Developing an understanding of ideas and nuances of Industrial relation; Define Concepts, trends dominated I.R. concept in early stages, causes of Disputes improving I.R, strengthening Trade unions & Corporate codes of conduct on workers.
C310.2	Identify the major causes for industrial conflicts, how Collective Bargaining, negotiation, adjudication and arbitration helps to reduce conflict. Techniques can be implemented to bring Industrial Peace .administrative machinery set up for resolving disputes.



  
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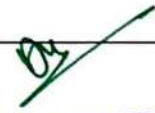
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C310.3	Explain the labour welfare, kinds of training available for workers, voluntary welfare measures, How do labour welfare officers can prevent the industrial conflicts and analyse the effective strategy to improve the labour management relations in India
C310.4	social security and social assistance provided for child labor, women labour, agriculture labour , contract labour, knowledge workers and physically challenged people. various Acts, which regulate labour and employment in India
C310.5	Explain the statutory health, welfare and safety provisions, find the consequences of work stress, preventive and curative measures of occupational diseases. causes of accidents in a factory and discuss the need for counseling, Major psychological problems of workers in factories
<b>C311 BA5017 MANAGERIAL BEHAVIOUR AND EFFECTIVENESS</b>	
C311.1	To understand the various roles of a manager for effective performance by comparing the different models in various levels of management. To understand the various dimensions of jobs performed by the employees in an organization.
C311.2	Knowing the methods of identifying the managerial talents, followed by recruitment ,selection and the various appraisal measures which would help in designing the managerial job.
C311.3	Understanding the importance of managerial effectiveness and the techniques for bridging the gap.
C311.4	Awareness about the environmental issues in organizational climate, leadership and group influences.



  
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C311.5	Understanding the managerial skills like self development, negotiation skills, creativity and innovation for developing the inner edge.
<b>C312 BA5020 ADVANCED DATABASE MANAGEMENT SYSTEM</b>	
C312.1	To provide insight into the various types of databases used in different organisations and to provide the applications of different databases for various purposes.
C312.2	To understand the steps in database query processing with the objective of accessing the data from the database. To provide the importance of data security and data recovery process followed by different organization.
C312.3	To understand the concepts of databases used in different locations with the intricacies of data access and providing data security in various networks. To understand the importance of data concurrency and the reliability of data used at various levels of management.
C312.4	To provide insight into Object Oriented Database structure with different models to store and retrieve the data from different modes in an organization.
C312.5	To understand the recent developments in Database Technology with various tools and techniques for better usage of database. To understand the various connectivity process for effective data access.
<b>C313 BA5024 E- BUSINESS MANAGEMENT</b>	
C313.1	Ability to understand basic business models on the web and the methods to generate revenue (Knowledge and Understanding)
C313.2	To attain a comprehensive level of understanding of the use of information and communication technologies for conducting and supporting business activities (Problem solving and analysis)



  
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C313.3	To attain a clear understanding of the strategic impacts of use of electronic tools and their effects on the way business activities are done (Problem solving)
C313.4	To understand the different ways of online payment system and their security (Critical thinking)
C313.5	To understand and critically analyze legal, ethical and privacy issues in doing business online (Thinking and analysis)
<b>C314 BA5024 Enterprise Resource planning</b>	
C314.1	Identify the important business functions provided by typical business software such as enterprise resource planning and Business Process management
C314.2	Describe basic concepts of ERP software solutions for best business practices.
C314.3	Design the ERP implementation strategies
C314.4	Create reengineered business processes for successful ERP implementation.
C314.5	To understand the basics in business intelligence (BI), data mining (DM), and knowledge discovery in databases
<b>II Year/SEMESTER : IV PROJECT</b>	
C401.1	Understand the problem statement in a various domain
C401.2	Identify the problem and do the literature survey
C401.3	Design a module for solving a problem in the respective area.
C401.4	Implement a module for solving a problem identified.
C401.5	Evaluate the module results and make improvements.



  
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