CARE COLLEGE OF ENGINEERING

(Approved by AICTE, New Delahi and Affiliated to Anna University, Chennai)
TIRUCHIRAPPALLI - 620009

Programme Name : Artificial Intelligence and Data Science
Programme Code : 203
Regulations : 2017

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO)
		At the end of the course, students will be able to:
Communicative English	HS8151	Read articles of a general kind in magazines and newspapers.
		Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
		Comprehend conversations and short talks delivered in English
		Write short essays of a general kind and personal letters and emails in English.
Engineering Mathematics I	MA8151	Use both the limit definition and rules of differentiation to differentiate functions.
		Apply differentiation to solve maxima and minima problems.
		Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
		Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
		Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
		Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
		Apply various techniques in solving differential equations
Engineering Physics	PH8151	Gain knowledge on the basics of properties of matter and its applications,
		Acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
		Adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
		Get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
		Understand the basics of crystals, their structures and different crystal growth
Engineering Chemistry	CY8151	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning
Problem Solving and Python Programming	GE8151	Develop algorithmic solutions to simple computational problems
		Read, write, execute by hand simple Python programs.
		Structure simple Python programs for solving problems.
		Decompose a Python program into functions.
		Represent compound data using Python lists, tuples, dictionaries.
		Read and write data from/to files in Python Programs.
Engineering Graphics	GE8152	Familiarize with the fundamentals and standards of Engineering graphics
		Perform freehand sketching of basic geometrical constructions and multiple views of objects.
		Project orthographic projections of lines and plane surfaces.
		Draw projections and solids and development of surfaces.
		Visualize and to project isometric and perspective sections of simple solids
Problem Solving and Python Programming Laboratory	GE8161	Write, test, and debug simple Python programs.
		Implement Python programs with conditionals and loops.
		Develop Python programs step-wise by defining functions and calling them.
		Use Python lists, tuples, dictionaries for representing compound data.
		Read and write data from/to files in Python.
Physics and Chemistry Laboratory	BS8161	Apply principles of elasticity, optics and thermal properties for engineering applications.
		outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters
Technical English II	HS8251	Read technical texts and write area- specific texts effortlessly.
		Listen and comprehend lectures and talks in their area of specialisation successfully.
		Speak appropriately and effectively in varied formal and informal contexts.
		Write reports and winning job applications
		Test the consistency and solve system of linear equations

Linear Algebra	MA8252	Find the basis and dimension of vector space
		Obtain the matrix of linear transformation and its eigenvalues and eigenvectors
		Find orthonormal basis of inner product space and find least square approximation
		Find eigenvalues of a matrix using numerical techniques and perform matrix decomposition
Data Structures Design	AD8251	Explain abstract data types
		Design, implement, and analyse linear data structures, such as lists, queues, and stacks, according to the needs of different applications
		Design, implement, and analyse efficient tree structures to meet requirements such as searching, indexing, and sorting
		Model problems as graph problems and implement efficient graph algorithms to solve them
Environmental Science and Engineering	GE8291	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
		Public awareness of environmental is at infant stage.
		Ignorance and incomplete knowledge has lead to misconceptions
		Development and improvement in std. of living has lead to serious environmental disasters
Basic Electrical, Electronics and Measurement Engineering	BE8255	Discuss the essentials of electric circuits and analysis.
		Discuss the basic operation of electric machines and transformers
		Introduction of renewable sources and common domestic loads.
		Introduction to measurement and metering for electric circuits
Digital Principles and Computer Organization	AD8252	Realize Boolean expression using logic gates.
		Design Combinational circuits for a given functions using logic gates.
		Implement Sequential circuits for a given application.
		Identify and describe the major components of computer system and Interpret,apply various addressing modes
		Analyze pipelined control units and various types of hazards in the instructions
		Compare properties of shared memory and distributed multiprocessor systems and cache coherence protocols.
Engineering Practices Laboratory	GE8261	Fabricate carpentry components and pipe connections including plumbing works.
		Use welding equipments to join the structures.
		Carry out the basic machining operations
		Make the models using sheet metal works
		Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
		Carry out basic home electrical works and appliances
		Measure the electrical quantities
		Elaborate on the components, gates, soldering practices.
Data Structures Design Laboratory	AD8261	Implement ADTs as Python classes
		Design, implement, and analyse linear data structures, such as lists, queues, and stacks, according to the needs of different applications
		Design, implement, and analyse efficient tree structures to meet requirements such as searching, indexing, and sorting
		Model problems as graph problems and implement efficient graph algorithms to solve them
Discrete Mathematics	MA8351	Have knowledge of the concepts needed to test the logic of a program.
		Have an understanding in identifying structures on many levels.
		Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
		Be aware of the counting principles.
Introduction to Operating Systems	AD8301	Outline the basic services and functionalities of operating systems
		Analyse various scheduling algorithms, and understand the different deadlock, prevention and avoidance schemes
		Illustrate the different memory management schemes
		Outline the functionality of file systems
		Compare and contrast Linux, Windows and mobile operating systems
Fundamentals of Data Science	AD8302	Apply the skills of data inspecting and cleansing.
		Determine the relationship between data dependencies using statistics
		Can handle data using primary tools used for data science in Python
		Represent the useful information using mathematical skills
		Can apply the knowledge for data describing and visualization using tools.
Object Oriented		Develop Java programs using OOP principles
		Develop Java programs with the concepts inheritance and interfaces

Object Oriented Programming	CS8392	Build Java applications using exceptions and I/O streams
		Develop Java applications with threads and generics classes
		Develop interactive Java programs using swings
Design and Analysis of Algorithms	AD8351	Design algorithms for various computing problems.
		Analyze the time and space complexity of algorithms.
		Critically analyze the different algorithm design techniques for a given problem.
		Modify existing algorithms to improve efficiency
		Ability to implement techniques in solving real time problems
Data Science Laboratory	AD8311	Develop relevant programming abilities.
		Demonstrate knowledge of statistical data analysis techniques
		Exhibit proficiency to build and assess data-based models.
		Demonstrate skill in Data management & processing tasks using Python
		Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively
Object Oriented Programming Laboratory	CS8383	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
		Develop and implement Java programs with arraylist, exception handling and multithreading .
		Design applications using file processing, generic programming and event handling.
Interpersonal Skills/Listening & Speaking	HS8381	Listen and respond appropriately.
		Participate in group discussions
		Make effective presentations
		Participate confidently and appropriately in conversations both formal and informal
Probability and Statistics	MA8391	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
		Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
		Apply the concept of testing of hypothesis for small and large samples in real life problems.
		Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.
		Have the notion of sampling distributions and statistical techniques used in engineering and management problems.
Database Design and Management	AD8401	Understand the database development life cycle and apply conceptual modeling
		Apply SQL and programming in SQL to create, manipulate and query the database
		Apply the conceptual-to-relational mapping and normalization to design relational database
		Determine the serializability of any non-serial schedule using concurrency techniques
		Apply the data model and querying in Object-relational and No-SQL databases
Artificial Intelligence I	AD8402	Explain autonomous agents that make effective decisions in fully informed, partially observable, and adversarial settings
		Choose appropriate algorithms for solving given AI problems
		Design and implement logical reasoning agents
		Design and implement agents that can reason under uncertainty
Data Analytics	AD8403	Understand the concept of sampling
		Apply the knowledge to derive hypotheses for given data
		Demonstrate the skills to perform various tests in the given data
		Ability to derive inference using Predictive Analytics
		Perform statistical analytics on a data set
Database Design and Management Laboratory	AD8411	Understand the database development life cycle
		Design relational database using conceptual-to-relational mapping, Normalization
		Apply SQL for creation, manipulation and retrieval of data
		Develop a database applications for real-time problems
		Design and query object-relational databases
Data Analytics Laboratory	AD8412	After the completion of this course, students will be able to:
		To become skilled to use various packages in Python
		Demonstrate the understanding of data distribution with various samples
		Ability to Implement T-Test ,Anova and Z-Test on sample data sets
		Understanding of Mathematical models in real world problems.
		Conduct time series analysis and draw conclusion
Artificial		Implement simple PEAS descriptions for given AI tasks
		Develop programs to implement simulated annealing and genetic algorithms

Intelligence - I Laboratory	AD8413	Demonstrate the ability to solve problems using searching and backtracking
		Ability to Implement simple reasoning systems using either backward or forward inference mechanisms
		Will be able to choose and implement a suitable technics for a given AI task
Advance Reading and writing	HS8461	Write different types of essays.
		Write winning job applications.
		Read and evaluate texts critically.
		Display critical thinking in various professional contexts.
Optimization Techniques	AD8501	Formulate and solve linear programming problems (LPP)
		Evaluate Integer Programming Problems, Transportation and Assignment Problems.
		Obtain solution to network problems using CPM and PERT techniques.
		Able to optimize the function subject to the constraints.
		Identify and solve problems under Markovian queuing models
Computer Networks	CW8691	Comprehend the basic layers and its functions in computer networks.
		Evaluate the performance of a network.
		Understand the basics of how data flows from one node to another.
		Analyze and design routing algorithms.
		Design protocols for various functions in the network.
		Understand the working of various application layer protocols.
Data Exploration and Visualization	AD8502	Understand the basics of Data Exploration
		Use Univariate and Multivariate Analysis for Data Exploration
		Explain various Data Visualization methods
		Apply the concept of Data Visualization on various datasets
		Apply the data visualization techniques using R language
Business Analytics	AD8551	Explain the real world business problems and model with analytical solutions.
		Identify the business processes for extracting Business Intelligence
		Apply predictive analytics for business fore-casting
		Apply analytics for supply chain and logistics management
		Use analytics for marketing and sales.
Machine Learning	AD8552	Understand the basics of ML
		Explain various ZMachine Learning methods
		Demonstrate various ML techniques using standard packages.
		Explore knowledge on Machine learning and Data Analytics
		Apply ML to various real time examples
Machine Learning Laboratory	AD8511	Understand the implementation procedures for the machine learning algorithms.
		Design Java/Python programs for various Learning algorithms.
		Apply appropriate Machine Learning algorithms to data sets
		Identify and apply Machine Learning algorithms to solve real world problems.
Mini Project on Data Sciences Pipeline	AD8512	Install analytical tools and configure distributed file system.
		Have skills in developing and executing analytical procedures in various distributed frameworks and databases.
		Develop, implement and deploy simple applications on very large datasets.
		Implement simple to complex data modeling in NoSQL databases.
		Implement real world applications by using suitable analytical framework and tools.
Artificial Intelligence II	AD8601	Explain the probabilistic reasoning using Bayesian inference
		Apply appropriate Probabilistic reasoning techniques for solving uncertainty problems
		Explain use of game theory for decision making.
		Explain and apply probabilistic models for various use cases
		Apply AI techniques for robotics
Data and Information Security	AD8602	Understand the fundamentals of security and the significance of number theory in computer security
		Learn the public key cryptographic standards and authentication scheme
		Able to apply the security frameworks for real time applications
		Understand the security threats and attacks in IoT, Cloud.
		Able to develop appropriate security algorithms understanding the possible threats
Web Technology	IT8501	Design simple web pages using markup languages like HTML and XHTML.
		Create dynamic web pages using DHTML and java script that is easy to navigate and use.
		Program server side web pages that have to process request from client side web pages.
		Represent web data using XML and develop web pages using JSP.

		Understand various web services and how these web services interact
Web Technology Laboratory	IT8511	Design simple web pages using markup languages like HTML and XHTML.
		Create dynamic web pages using DHTML and java script that is easy to navigate and use.
		Program server side web pages that have to process request from client side web pages.
		Represent web data using XML and develop web pages using JSP.
		Understand various web services and how these web services interact.
Artificial Intelligence - II Laboratory	AD8611	Solve basic AI based problems.
		Implement the concept of Bayesian Network.
		Apply AI techniques to real-world problems to develop intelligent systems
		Implement HMM for real-world application.
		Use Reinforcement Learning to implement various intelligent systems.
Professional Communication	HS8581	Make effective presentations
		Participate confidently in Group Discussions.
		Attend job interviews and be successful in them.
		Develop adequate Soft Skills required for the workplace
Socially Relevant Project	AD8612	Use different platforms and tools like SAS, Python, R, Scala.
		Big Data: Hadoop Ecosystem (Hive, Pig, Sqoop, Flume), Big Data Lakes,No SQL, Apache Spark, Spark MLLib , HPCC, Strom.
		Business Intelligence : SQL, Microsoft Power BI, SAP BI, Tableau, Oracle Fusion,
		Machine Learning and Deep Learrning : TensorFlow, Keras, Artificial Neural Networks, Deep NeuralNets, Convolution Neural Networks, Auto encoders.
Deep Learning	AD8701	Explain the basics in deep neural networks
		Apply Convolution Neural Network for image processing
		Explain the basics of Artificial Intelligence using deep learning
		Apply deep learning algorithms for data science
		Apply deep learning algorithms for variety applications
Text Analytics	AD8702	Design text extraction techniques
		Devise clustering techniques for text mining
		Design classification techniques for text mining
		Apply visualization techniques and perform anomaly & trend detection
		Perform Event operations in Text streams
Basics of Computer Vision	AD8703	Explain low level processing of image and transformation techniques applied to images.
		Explain the feature extraction, segmentation and object recognition methods.
		Apply Histogram transform for detection of geometric shapes like line, ellipse and objects.
		Illustrate 3D vision process and motion estimation techniques.
		Apply vision techniques to real time applications
Big Data Management	AD8704	Describe big data and use cases from selected business domains.
		Explain NoSQL big data management.
		Install, configure, and run Hadoop and HDFS.
		Perform map-reduce analytics using Hadoop.
		Use Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data analytics.
AI and Robotics	AD8705	Explain the types of Robots
		Narrate the kinematics of Robots
		Implement image processing algorithms
		Devise Localization algorithms
		Devise Path planning methods for navigation
Deep Learning Laboratory	AD8711	Apply deep neural network for simple problems
		Apply Convolution Neural Network for image processing
		Apply Recurrent Neural Network and its variants for text analysis
		Apply generative models for data augmentation
		Develop a real world application using suitable deep neural networks

Principal

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DEPARTMENT OF CIVIL ENGINEERING
COURSE OUTCOMES (COs)

Programme: CIVIL R2017

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO) After the course, the student should be able to
TECHNICAL ENGLISH	HS8151	Enable the learners develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read articles of general kind in magazines and news papers
		Participate effectively in informal conversations; introduce themselves and their friends and express opinion in English
		Comprehend conversations and short talks delivered in English
		Write short essays of general kind and personal letters and e-mails in English
ENGINEERING MATHEMATICS	MA8151	Understand the limit, continuity and derivative of the functions. Solve various functions and its maxima /minima using differentiation rules.
		Apply the total and partial derivatives in Taylor series expansion of functions and the extremum of functions.
		Evaluate the integrals both by using Riemann sums and by using the Fundamental theorem of Calculus. Evaluate integrals using various techniques of integration.
		Understand the concepts of double integration and determine the area using integration. Also understands the concepts of the change of order of integration and Change of variables in integrals.
		Understand the concepts of Triple integration and determine the volume using integration.
		Solve the linear equations of second and higher order with constant, and variable coefficients, simultaneous first order differential equations. Apply the method of variation of parameters and undertermined
ENGINEERING PHYSICS	PH8151	Gain knowledge on the basics of properties of matter and its applications
		Get knowledge on advanced physics concepts of quantum theory and its applications in tunnelling microscope
		Understand the basics of crystals,their structures and different crystal growth techniques
		Adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchanger
		Acquire the knowledge in optical devices and their applications in fibre optics
		Acquire knowledge on the concepts waves and oscillatory motion
ENGINEERING CHEMISTRY	CY8151	Familiarize with boiler feed water, its requirements, related problems and water treatment techniques for industrial applications.
		Discuss the basics and principles of adsorption for industrial applications.
		Develop an understanding of the basic concepts of phase rule, its application to one/two component systems and appreciate the purpose and significances of alloys.
		Explain the different types of fuels, their synthesis and analysis.
		Analysis of combustion process and its calculations.
		Summarize the knowledge on various energy sources and different kinds of batteries.
PROBLEM SOLVING AND PYTHON PROGRAMMING	GE8151	Develop algorithmic solutions to simple computational problems
		Develop algorithmic solutions to simple computational problems
		Read, write, execute by hand simple Python programs.
		Read, write, execute by hand simple Python programs.
		Structure simple Python programs for solving problems.
		Structure simple Python programs for solving problems.

ENGINEERING GRAPHICS	GE8152	Develop the basic curvilinear geometric shapes and orthographic projections of various objects
		virtualize the projection of points, lines an planes in accordance with first angle projection
		Create the views projections of prisms and pyramids for different geometries
		represent the views of sectional solids and development of surfaces with different geometries
		Project the isometric and perspective views of various objects in different positions.
		Apply the concepts of engineering graphics in real world applications
PHYSICS AND CHEMISTRY LABORATORY	BS8161	Acquire the knowledge of how to measure the wavelength, velocity, particle size and thickness of a thin object using the principles of interference and diffraction.
		Understand how to determine the modulus of the given material
		Understand how to find the thermal conductivity and bandgap of the material using heat energy
		Analyze the various water quality parameters like hardness, alkalinity and dissolved oxygen present in the water sample.
		Acquire practical skills by using instruments conductivity meter, pH meter and potentiometer.
		Find the molecular weight of a polymer by viscometer
PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	GE8161	Write, test, and debug simple Python programs.
		Implement Python programs with conditional statements
		Implement Python programs with iterative statements
		Develop Python programs step-wise by defining functions and calling them.
		Use Python lists, tuples, dictionaries for representing compound data.
		Read and write data from/to files in Python
ENVIRONMENTAL SCIENCE	GE8291	Infer the importance of environment and explain the concepts,types,structure and functions of ecosystem
		Recall the various functions,different values,measurements,levels,measurement,levels,threats and the need for conservation of biodiversity
		Explain the different types of pollution and propose the suitable methods to prevent the same to enhance the environment
		Discuss the different types of natural resources,characteristics,optimum usage and its importance of conservation
		List the various social issues,environment protection acts,different disasters and possible solutions to protect the environment for sustainable environment
		Describe the effects of population explosion,trend of population in various countries and explain the role of IT in environment and human health
TECHNICAL ENGLISH II	HS8251	Enable the learners to develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read technical texts and write area - specific texts effortlessly
		Listen and comprehend lectures and talks in their area of specialisation successfully
		Speak appropriately and effectively in varied formal and informal contexts
		Write reports and winning job applications
ENGINEERING MATHEMATICS II	MA8251	Eigenvalues and eigen vectors, diagonalization of a matrix, symmetric matrices, positive definite matrices and similar matrices
		Gradient,divergence and curl of a vector point function and related identies
		Evaluation of line, surface and volume integrals using Gauss, Stokes and Greens theorems and their verification
		Analytic functions, cauchy's Riemann equation,properties and conformal mapping
		complex integration Solve contour integration and Cauchy Residue theorem
		Laplace transform and properties and inverse Laplace transform
		summarize the basic laws and concepts related to electrical, electronics and communication engineering
		explain the construction and operation of electrical measuring Instruments&Electrical machines

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	BE8251	Compute the various electrical parameters of electrical circuits and machines
		Elucide the construction and operation of semiconductor devices and digital circuits
		Explain the construction and operation of semiconductor devices and digital circuits
		Explain the operation of functional blocks of various communication systems
PHYSICS FOR CIVIL ENGINEERING	PH8201	Knowledge on the thermal performance of buildings
		Acquire knowledge on the acoustic properties of buildings
		Get knowledge on various lighting designs for buildings
		Gain knowledge on the performance of engineering materials
		Gain knowledge on the properties of engineering materials
		Understand the hazards of buildings
ENGINEERING MECHANICS	GE8292	illustrate the vectorial and scalar representation of forces and moments
		analyse the rigid body in equilibrium
		evaluate the properties of surfaces and solids
		calculate dynamic forces exerted in rigid body
		determine the friction and the effects by the laws of friction
		Distinguish Translation and Rotation of rigid bodies
ENGINEERING PRACTICES	GE8261	Distinguish residential house wiring, fluorescent lamp wiring and stair case wiring.
		Define electrical quantities like voltage, current, energy and resistance and their measurement using CRO
		Analyse different logic gates, clock, rectifier and to solder devices and components.
		Understand the pipe connections for the home application and industrial constructions
		Plan the real geometry of the shapes for industrial applications
		Understand the concept of connecting the metal by welding.
COMPUTER AIDED BUILDING DRAWING	CE8211	Familiarize with principles of planning, orientation and complete joinery details for paneled and glazed doors and windows.
		Develop plan, elevation and section of buildings with load bearing walls.
		Create various types of plans for buildings with sloped roof and draw their corresponding elevation and section.
		Draw the plan, elevation and sectional view of R.C.C. framed structures with flat roof.
		Propose the drawing of R.C.C. framed structure with sloped roof.
		Draft the various views of Industrial Buildings - North light Roof Truss.
TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	MA8353	The fundamental concepts of partial differential equations and the various solution procedures for solving the first order non-linear partial differential equations.
		Analytical methods for solving higher order partial differential equations.
		Understand the Dirichlet's conditions, the basic concepts in Fourier series, analyze their properties such as parsevals identity and its problems.
		The application of Fourier series for solving the initial boundary value problems in one Dimensional wave and heat equations and boundary value problems in elliptic equations.
		Understand ,Apply,Evaluate and analyse the concepts of Fourier transform and mathematical concepts which are applied in various field of Engineering.
		The mathematical techniques of Z-transform applied in various topics in engineering discipline.
STRENGTH OF MATERIALS I	CE8301	Understand the concepts of stress and strain, principal stresses and principal plane
		Determine the shear force and bending moment in beams and understand the concepts of theory of simple bending
		Calculate the deflection of beams by different methods and selection of methods for slope and deflection

STRENGTH OF MATERIALS I	CE8301	Apply basic equation of torsion in design of circular shaft and helical springs
		Analyze the pin jointed stress by the method of joint
		Analyze the pin jointed stress by the method of section and tension coefficient method
FLUID MECHANICS	CE8302	Get basic knowledge of fluids in static, kinematic and dynamic equilibrium.
		Understand and solve the problems related to equation of motion.
		Gain knowledge about dimensional and model analysis.
		Learn types of flow and losses of flow in pipes.
		Understand the boundary layer concepts.
		Solve the boundary layer problems.
SURVEYING	CE8351	Understand the use of various surveying instruments and mapping
		Understand methods of leveling and setting levels with different instruments
		Measuring Horizontal angle and vertical angle using different instruments
		Understand concepts of hydrographic surveying , tides and MSL
		Understand concepts of astronomical surveying and methods to determine time,longitude,latitude and azimuth
		Understand concept and principle of modern surveying
CONSTRUCTION MATERIALS	CE8391	Compare the properties of most common and advanced building materials.
		Understand the typical and potential applications of lime and cement.
		Understand the typical and potential applications of fine and coarse aggregate.
		Know the production of concrete and also the method of placing and making concrete elements.
		Understand the application of timber and other materials.
		Understand the importance of modern material for construction.
ENGINEERING GEOLOGY	CE8392	Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.
		Get basics knowledge on properties of minerals
		Gain knowledge about types of rocks, their distribution and uses
		Understand the methods of study on geological structure
		Understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor
		Understand the application of geological investigation of Landslides
CONSTRUCTION MATERIALS LABORATORY	CE8311	Acquire knowledge in testing of fine aggregates.
		Obtain knowledge in testing of coarse aggregate.
		Attain knowledge in testing of concrete.
		Gain knowledge in testing of bricks.
		Acquire knowledge in testing of blocks.
		Acquire knowledge in the area of testing of construction materials and components of construction elements experimentally.
INTERPERSONAL SKILLS / LISTENING AND SPEAKING	HS8381	Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills
		Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities
		Improve general and academic listening skills
		Familiar with native accent and communicative functions

		Participate successfully in group discussion
		Make effective presentations
SURVEYING LABORATORY	CE8361	Acquired practical knowledge on handling basic survey instruments including Theodolite
		Acquired practical knowledge on handling basic survey instruments including Tacheometry
		Acquired practical knowledge on handling basic survey instruments including Total Station and GPS and have adequate knowledge to carryout Triangulation
		Acquired practical knowledge on handling basic survey instruments including Astronomical surveying including general field marking for various engineering projects and Location of site etc.
		Participate successfully in group discussion
		Make effective presentations
NUMERICAL METHODS	MA8491	Solve algebraic and transcendental equations by various methods. Simultaneous linear equations using direct and indirect methods. Compute eigen values of a matrix by power method and by Jacobi method of symmetric matrix.
		Interpret the data using interpolation using various methods, cubic spline approximation and difference operators.
		Compute the numerical differentiation using various methods and integration using trapezoidal and simpson¿s rules to solve single and double integration.
		Solving first order and second order differential equations using various types of single step methods.
		Solving first order and second order differential equations using various types of multi step methods.
		Applying finite difference methods for solving two point linear boundary value problems. Solving one dimensional heat flow equation and wave equation by explicit and implicit methods solve two dimensional heat equation.
CONSTRUCTION TECHNIQUES AND PRACTICES	CE8401	Know the different construction techniques and structural system
		Understand various techniques and practices on masonry construction,flooring and roofing
		Plan the requirements for substructure construction
		Know the methods and techniques involved in the construction of various types of superstructures
		Select, maintain and operate hand and power tools and equipment used in the building construction sites.
		Distinguish between various selection criteria of construction equipments
STRENGTH OF MATERIALS II	CE8402	Determine the strain energy and compute the deflection of determinate beams,frames and trusses using energy principles
		Analyse propped cantilever,fixed beam and continuous beam using theoram of three moment equation for external loading and support settlements.
		Find the load carrying capacity of columns and stresses induced in columns and cylinders.
		Determine the principle stresses and planes for an element in three dimensional state of stress and study various theories of failure.
		Determine the stresses due to unsymmetrical bending of beams and locate the shear center.
		Find the stresses in curved beams.
APPLIED HYDRAULIC ENGINEERING	CE8403	Apply their knowledge of fluid mechanics in addressing problems in open channels and identify an effective section for flow in different cross sections.
		Identify the flows and solve problems in Gradually Varied Flow.
		Solve the problems in Rapidly Varied Flow in Steady state conditions.
		Understand the Principles of impact of Jet.
		Understand the principles of turbines and working, application of turbines.
		Understand the principles of pumps and working, application of pumps.
CONCRETE TECHNOLOGY	CE8404	THE VARIOUS REQUIREMENTS OF CEMENT, AGGREGATES AND WATER FOR MAKING CONCRETE
		THE EFFECT OF ADMIXTURES ON PROPERTIES OF CONCRETE
		THE CONCEPT AND PROCEDURE OF MIX DESIGN AS PER IS METHOD
		THE PROPERTIES OF CONCRETE IN FRESH STATE

		THE PROPERTIES OF CONCRETE IN HARDENED STATE
		THE IMPORTANCE AND APPLICATION OF SPECIAL CONCRETE
SOIL MECHANICS	CE8491	Classify the soil based on Index Properties
		Assess the engineering Properties based on Index properties
		Understand the stress concept in soils
		Understand and identify the settlement in soils
		Determine the shear strength of soil
		Analyse both finite and infinite slopes
STRENGTH OF MATERIALS LABORATORY	CE8481	Explain the various hardness test on metals
		Draw the stress - strain curve for mild steel
		Calculate modulus of rigidity of the given specimen
		Describe strength characteristics of cement cube
		Solve the various data s associated with the deflection of beam.
		Required knowledge in the area of testing of materials
HYDRAULIC ENGINEERING LABORATORY	CE8461	Measure flow in pipes.
		Determine frictional losses.
		Gain knowledge about centrifugal and gear pumps.
		Gain knowledge about submersible and reciprocating pumps.
		Develop characteristics of pelton wheel turbine.
		Develop characteristics of francis / kaplan turbine.
ADVANCED READINGAND WRITING	HS8461	Strengthen the reading skills of students of engineering.
		Enhance their writing skills with specific reference to technical writing.
		Develop students¿ critical thinking skills.
		Provide more opportunities to develop their project and proposal writing skills.
		Strengthen the vocabulary in order to make the students to be an effective communicator
		Understand the different styles of writing.
DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS	CE8501	Understand the various design methodologies for the design of RC elements.
		Know the analysis and design of flanged beams by limit state method
		Design of beams for shear, bond and torsion
		Design the various types of slabs and staircase by limit state method.
		Design columns for axial, uniaxial and biaxial eccentric loadings.
		Design of footing by limit state method.
STRUCTURAL ANALYSIS I	CE8502	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid frames by strain energy method.
		Analyze continuous beams by slope deflection method.
		Analyze plane and inclined rigid frames by slope deflection method.
		Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
		Analyze the indeterminate pin-jointed plane frames, continuous beams and rigid frames using matrix flexibility method.

		Understand the concept of matrix stiffness method and analysis of continuous beams, pin-jointed truss and rigid plane frames.
WATER SUPPLY ENGINEERING	EN8491	Insight into the structure of drinking water supply systems
		Understanding of water quality criteria and standards, and their relation to public health
		Insight into the structure of water transport, treatment and distribution
		Knowledge in various unit operations and processes in water treatment
		Design the various functional units in water treatment
		Design and evaluate water supply project alternatives on basis of chosen criteria
FOUNDATION ENGINEERING	CE8591	Understand the site investigation, methods and sampling
		Get knowledge on bearing capacity and testing methods
		Design shallow footings
		Determine the load carrying capacity, settlement of pile foundation
		Determine the earth pressure on retaining walls
		Analyze the stability of retaining walls
ADVANCED SURVEYING	GI8013	Know the astronomical surveying
		Do the photogrammetric surveying and interpretation
		solve the field problems with Total station
		know the GPS surveying and the data processing
		understand the route surveys and tunnel alignments
		Concept and principle of modern surveying
ENVIRONMENT AND AGRICULTURE	OAI551	Appreciate the role of environment in current practice of agriculture
		Understand the impact of agriculture on environment
		Concern of climate change and emerging global issues
		Have exposure to current agricultural practices
		Ecological context of agriculture will be understood
		Gain knowledge on sustainability aspects of agriculture
SOIL MECHANICS LABORATORY	CE8511	Conduct test to determine specific gravity of fine aggregate and particle size distribution
		Conduct test to determine Atterberg's limits (Liquid limit and plastic limit)
		Conduct test to determine shrinkage limit and free swell index of soil
		Conduct test to determine shear strength of soil by unconfined compression
		Conduct test to determine coefficient of permeability of soil
		Conduct test to determine compressibility of soil
WATER AND WASTE WATER ANALYSIS LABORATORY	CE8512	Determine various physical characteristics of water & wastewater
		Determine various chemical characteristics of water & wastewater
		Determine strength of wastewater
		Determine the amount of salts in water & wastewater
		Gain knowledge on type of treatment and disposal
		Gain knowledge on type of microorganisms in sludge and wastewater
		Understand the various design concepts, for the design of Steel Structures.

DESIGN OF STEEL STRUCTURAL ELEMENTS	CE8601	Analyze and solve Various Steel Connections.
		Analyze and solve Various Steel Tension Members.
		Know the analysis and design of Steel Compression Members by Limit State Method.
		Design the various types of Steel Beams and Plate Girders by Llimit State Method.
		Design Roof Trusses and and Gantry Girder for various loadings.
STRUCTURAL ANALYSIS I	CE8602	Draw influence lines for statically determinate structures and calculate critical stress resultants for beams
		Draw influence lines for statically determinate structures and calculate critical stress resultants for trusses
		Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams
		Analyse the three hinged, two hinged and fixed arches
		Analyse the suspension bridges with stiffening girders
		Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames
IRRIGATION ENGINEERING	CE8603	Have Knowledge and skills on crop water requirements
		Understand the methods of irrigation
		Gain knowledge on types of impounding structures
		Understand methods of irrigation including canal irrigation
		Get knowledge on water management on optimization of water use
		Have Knowledge on water management in irrigation
HIGHWAY ENGINEERING	CE8604	Get knowledge on planning and aligning of highway.
		Calculate the various cross sectional elements of highway.
		Design of highways.
		Flexible and rigid pavements.
		Gain knowledge on highway construction materials, properties and testing methods.
		Understand the concept of pavement management system, evaluation of distress and Maintenance of pavements.
WASTEWATER ENGINEERING	EN8592	Estimate sewage generation
		Design sewer system including sewage pumping stations
		Have the required understanding on the characteristics and composition of sewage, self purification of streams
		Perform basic design of the unit operations and processes that are used in sewage treatment
		Understand the methods for disposal of sewage
		Gain knowledgs on sludge treatment and disposal
AIR POLLUTION AND CONTROL ENGINEERING	CE8005	Understanding of the nature and characteristics of air pollutants,noise pollution and basic concepts of air quality management
		Identify ,formulate and solve air and noise pollution problems.
		Design stacks and particulate air pollution control devices to meet applicable standards.
		Select control equipment's.
		Ensure quality,control.
		Ensure preventive measures.
PROFESSIONAL	HS8581	Enhance the learners speaking skill through various activities like group discussion, telephonic conversation, presentation skill etc.,
		Develop listening and speaking skills through communicative functions
		Enhance the Employability and Career Skills of student

COMMUNICATION	HS8581	Orient the students towards grooming as a professional
		Make them Employability Graduates
		Develop their confidence and help them attend interviews successfully
HIGHWAY ENGINEERING LABORATORY	CE8611	Techniques to characterize various pavement materials through aggregate test
		Knows the techniques to characterize various pavement materials through bitumen test
		Knows the techniques to characterize various pavement materials through bituminous mixes test
		Knows the techniques to characterize various pavement materials through skid resistance test
		Knows the techniques to characterize various pavement materials through benkelman beam test
		Knows the techniques to characterize various pavement materials through relavant test
IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING	CE8612	Design and draw various units of Municipal water treatment plants
		Design and draw various units of Sewage treatment plants
		Design and draw various units of Sewage disposal arrangements
		Design and draw tank surplus weir
		Design and draw impounding and cross drainage structures
		Design and draw canal regulation structures
STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING	CE6701	Understand the theory of vibrations of SDOF system.
		Know the response to free and forced vibration for two degree of freedom system and MDOF.
		Know the response to free and forced vibration for MDOF.
		Gain the knowledge about elements of seismology.
		Understand the response of structures to earthquake.
		Design the structures for seismic loading as per code provisions.
PRESTRESSED CONCRETE STRUCTURES	CE6702	Understand the behaviour of Pre Stressed Concrete members and able to analyze the Pre Stressed Concrete beams.
		Understand Various Losses of Pre Stress.
		Design the Pre Stressed Concrete beams for Flexure and Shear as per the relevant design code (IS 1343).
		Analyze for deflection of Pre Stressed Concrete members and design the Anchorage zone
		Analyze and Design the Composite beams and Continuous beams.
		Design the Pre Stressed Concrete Sleepers, Tanks, Pipes and Poles.
WATER RESOURCES AND IRRIGATION ENGINEERING	CE6703	Obtain knowledge and skills on planning of reservoir system.
		Gain knowledge and skills on design of reservoir system.
		Have knowledge and skills on operation of reservoir system.
		Ggain knowledge on different methods canal irrigation systems.
		Gain knowledge on different methods of irrigation.
		Acquire knowledge and skills on management of reservoir system.
ESTIMATION AND QUANTITY SURVEYING	CE6704	Understand estimation of residential Buildings
		Understand estimation of Industrial Buildings
		Understand estimation of Other Structures such as Septic Tank,Culverts,Wells etc
		Understand concept and procedure for inviting tenders , making contracts
		Understand basics of valuation,depreciation,mortgage and lease

		Understand about report Preparation and its Principles
HOUSING PLANNING AND MANAGEMENT	CE6007	Make use of basic terms of housing,housing laws and control regulations
		Identify public,private and non-government organizations
		Identify different types of sites
		Design and evaluate projects
		Choose effective materials for construction
		Make use of finance assistance given by government
MUNICIPAL SOLID WASTE MANAGEMENT	EN6501	Understanding of the nature and characteristics of municipal solid wastes
		Understanding of the regulatory requirements regarding municipal solid waste management
		Plan waste minimization and storage design
		Plan collection and transportation of waste
		Have the knowledge of processing of waste
		Understand and design the various methods of disposal of municipal solid waste
COMPUTER AIDED DESIGN AND DRAFTING LABORATORY	CE6711	Design and draw the RCC cantilever and counter fort type retaining walls with reinforcement details.
		Design the solid slab and RCC Tee beam bridges for IRC loading and reinforcement details.
		Evaluate the design of circular water tanks.
		Develop the design of rectangular RCC water tanks and draw the reinforcement details.
		Design the plate Girder Bridge, Truss Girder Bridge and create Detailed Drawings including connections.
		Design and draw the hemispherical bottomed steel tank.
DESIGN PROJECT	CE6712	Work in a team to select a problem for Project Work.
		Work in a team to select a problem for Project Work. Review and evaluate the available literature on the chosen Structure.
		Identify the elements for Loading Calculation.
		Design the Structural Components.
		Prepare Drawings and Detailing.
		Apply the Computer Softwares.
PREFABRICATED STRUCTURES	CE6016	Design some of the prefabricated elements and also have the knowledge of the construction methods in using these elements.
		Understand the different prefabricated components
		Classify the types of prefabricated building construction.
		Learn about the joints in prefabricated structures.
		Gain knowledge about the main processes of building construction using prefabricated technology.
		Use technologies used in fabrication, erection of prefabricated structures in abnormal loads.
PRINCIPLES OF MANAGEMENT	MG6851	Demonstrate Critical Thinking when presented with managerial problems & express their view of opinion on Managerial issues in an articulated way.
		Understand the major internal features of a business system & the environment in which it operates.
		Identify & explain the importance of the management process of identifying some of the key skills required.
		Understand the importance of delegation.
		Implement planning, organising, directing,coordinating & Controlling activities in project/Career
		Understand the role of budget & finance in project.

REPAIR AND REHABILITATION OF STRUCTURES	CE6021	Understand the importance of maintenance and assessment method of distressed structures.
		Understand the strength and durability properties, their effects due to climate and temperature.
		Understand the recent development in concrete and various types of concrete in current use.
		Understand the techniques for repair and protection methods.
		Understand the repair, rehabilitation and retrofitting of structures.
		Understand the demolition methods with the help of case studies.
PROJECT WORK	CE6811	Selection of a problem for project work by team work
		Collect, Review and infer from the literature available on the chosen problem
		Come out with the methodology to solve the identified problem
		Apply the principles, tools, modern construction materials and techniques to solve the problem
		Develop understanding of technical dissertation presentation and writing
		Improve presentation skills.

Principal

CARE COLLEGE OF ENGINEERING

(Approved by AICTE, New Delahi and Affiliated to Anna University, Chennai)
TIRUCHIRAPPALLI - 620009

DEPARTMENT OF CIVIL ENGINEERING
COURSE OUTCOMES (COs)

Programme: CEM **2017R**

COURSE NAME	**COURSE CODE**	**COURSE OUTCOMES (CO)** **After the course, the student should be able to**
Statistical Methods For Engineers	MA5165	Know consistency, efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem.
		Use statistical tests in testing hypotheses on data.
		Concept of linear regression, correlation, and its applications.
		List the guidelines for designing experiments and recognize the key historical figures in Design of Experiments.
		Perform exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.
Modern Construction Materials	CN5101	Have the knowledge of modern construction materials to be used in the field.
Construction Equipment	CN5102	Know various types of equipment to be used in the constructions projects.
Construction Planning, Scheduling And Control	CN5103	Know the development of construction planning, scheduling procedure and controls.
Advanced Construction Techniques	CN5201	Know the modern construction techniques to be used in the construction of buildings and special structures and also rehabilitation and strengthening techniques and demolition.
Contract Laws And Regulations	CN5202	Know different types of contracts in construction, arbitration and legal aspect and its provisions.
Computer Applications In Construction Engineering And Planning	CN5203	Know the computer applications in construction, different optimization techniques and sequencing problems.
Economics And Finance Management In Construction	CN5204	Know the concepts in economics and finance in constructions.
Advanced Construction Engineering And Computing Techniques Laboratory	CN5211	Test the concrete mixes designed as per IS, ACI and BS methods.
		Know various tests on hardened concrete.
		Do the scheduling of constructions projects using tools primavera and MS projects.
Quality Control And Assurance In Construction	CN5301	Know the quality control aspects in planning, systems, management, assurance and improvement techniques.
Project Work (Phase I)	CN5313	Have a clear idea of his/her area of work and they are in a position to carry out the remaining phase II work in a systematic way.
Project Work (Phase Ii)	CN5412	Take up any challenging practical problems in the field of construction engineering and management and find better solutions to it.
Advanced Concrete Technology	CN5001	Know various tests on fresh, hardened concrete, special concrete and the methods of manufacturing of concrete.
Shoring, Scaffolding And Formwork	CN5002	Know the detailed planning of framework, design of forms and erection of form work.
Quantitative Techniques In Management	CN5003	Know operations research, production management, financial management and cost concepts.
System Integration In Construction	CN5004	Know various Structural systems, Services, Safety and Maintenance requirements in construction.
Design Of Energy Efficient Buildings	CN5005	Know various components which makes the building energy efficient such as lighting, space conditioning, heat control and energy efficient.
Construction Project Management	CN5006	Know the modern trends in project management viz. design, construction, resource unitization and cost estimation.
Construction Personnel Management	CN5007	Know various processes in manpower planning, organizational and welfare measures.
Stress Management	CN5008	Understand the management of work related stress at an individual and organizational level and will help them to develop and implement effective strategies to prevent and manage stress at work.
Project Formulation And Appraisal	CN5009	Know the formulations of projects, projects costing, appraisal and financing.
Resource Management And Control In Construction	CN5010	Know resource planning, management, allocation and resource leveling in construction.
Project Safety Management	CN5011	Know various constructions safety concepts.
Management Information Systems	CN5012	Know the various applications of information systems in management.

DEPARTMENT OF CSE
COURSE OUTCOMES (COs)

Programme: CSE **2017R**

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO) After the course, the student should be able to
Communicative English	HS8151	Enable the learners to develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read articles of general kind in magazines and news papers
		Participate effectively in informal conversations; introduce themselves and their friends and express opinion in English
		Comprehend conversations and short talks delivered in English
		Write short essays of general kind and personal letters and e-mails in English
Engineering Mathematics - I	MA8151	Understand the limit, continuity and derivative of the functions. Solve various functions and its maxima /minima using differentiation rules.
		Apply the total and partial derivatives in Taylor series expansion of functions and the extremum of functions.
		Evaluate the integrals both by using Riemann sums and by using the Fundamental theorem of Calculus. Evaluate integrals using various techniques of integration.
		Understand the concepts of double integration and determine the area using integration. Also understands the concepts of the change of order of integration and Change of variables in integrals.
		Understand the concepts of Triple integration and determine the volume using integration.
		Solve the linear equations of second and higher order with constant, and variable coefficients, simultaneous first order differential equations. Apply the method of variation of parameters and undertermined coefficients in solving the differential equation.
Engineering Physics	PH8151	gain knowledge on the basics of properties of matter and its applications,
		acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
		have adequate knowledge on the concepts of thermal properties of materials and their application in expansion joints and heat exchangers.
		get knowledge on advanced Physics concepts of Quantum theory and its applications in tunneling microscope.
		understand the basics of crystals structure and their Structures.
		gain knowldege in the different types of crystal growth techniques.
Engineering Chemistry	CY8151	Familiarize the students with boiler feed water, its requirements, related problems and water treatment techniques for industrial applications.
		Discuss the basics and principles of adsorption for industrial applications.
		Develop an understanding of the basic concepts of phase rule, its application to one/two component systems and appreciate the purpose and significances of alloys.
		Explain the different types of fuels, their synthesis and analysis.
		Analysis of combustion process and its calculations.
		Summarize the knowledge on various energy sources and different kinds of batteries.
Problem Solving and Python Programming	GE8151	Develop Algorithmic solutions to simple Computational Problems
		Read,write,execute by hand simple python programs
		Structure Simple python programs for solving problems
		Decompose a python programs into functions
		Represent Compound data using Python lists,tuples and Dictionaries
		Read & Write Data from /to Files in python programs
Engineering Graphics	GE8152	Represent the application of orthographic projections for lines and plane surfaces.
		Create the projection solids and development of surfaces.
		Learn the optimum path for the benefit of society by using isometric and perspective sections of simple solids
		Develop the graphic skills for communication of concepts, ideas and design of engineering products.
		Learn the standards of technical drawings.
		Develop the creative knowledge about the free hand sketching of basic geometrical constructions and multiple views.
Problem Solving and Python Programming Laboratory	GE8161	Write, test, and debug simple Python programs.
		Implement Python programs with conditional statements
		Implement Python programs with iterative statements
		Develop Python programs step-wise by defining functions and calling them.

Laboratory		Use Python lists, tuples, dictionaries for representing compound data
		Read and write data from/to files in Python
Physics and Chemistry Laboratory	BS8161	acquire the knowledge of how to measure the wavelength, velocity, particle size and thickness of a thin objec using the principles of interference and diffraction.
		Understand how to determine the modulus of the given materia
		Understand how to find the thermal conductivity and bandgap of the material using heat energ
		Analyze the various water quality parameters like hardness, alkalinity and dissolved oxygen present in the wate sample.
		Acquire practical skills by using instruments Conductivity meter, pH meter and Potentiometer
		Find the molecular weight of a polymer by viscometer
Technical English	HS8251	Enable the learners to develop their basic communication skills in English based on LSRW skil
		Inculcate the habit of reading and writing leading to effective and efficient communicatio
		Read technical texts and write area - specific texts effortlessly
		Listen and comprehend lectures and talks in their area of specialisation successfull
		Speak appropriately and effectively in varied formal and informal context
		Speak appropriately and effectively in varied formal and informal context
Engineering Mathematics - II	MA8251	Eigen values and eigen vectors,diagonalisation of a matrix,symmetric matrices,positive definite matrices an similar matrices.
		Gradient,divergence and curl of a vector point function and related identities
		Evaluation of line,surface and volume integrals using Gauss,stokes and Green's theorems and their verificatio
		Analytic functions,conformal mapping and complex integration
		Solve contour integration and Cauchy Residue theorem
		Laplace transform and inverse transform of simple functions,properties, various related theorems and application to differential equations with constant coefficients.
Physics for Information Science	PH8252	Gain knowledge on classical and quantum electron theories, and energy band structure
		Acquire knowledge on basics of semiconductor physics and its applications in various device
		Get knowledge on magnetic properties of materials and their applications in data storag
		Have the necessary understanding on the functioning of optical materials for optoelectronic
		Understand the basics of quantum structures
		Understand the applications in carbon electronics
Basic Electrical, Electronics and Measurement Engineering	BE8255	Analyze the fundamentals of electrical and electronic circuit connection
		Analyze the fundamental laws, theorems of electrical circuits and also t
		Illustrates the basic principles of electrical machines and their performance
		Explain the different energy sources, protective devices and their field application
		Define the construction, working principle of electronic circuits
		Evaluates the principles and operation of measuring instruments and transducers
Environmental Science and Engineering	GE8291	Infer The Importance Of Environment And Explain The Concept, Types And Functions Of Ecosyster
		Recall The Various Functions,Different Values,Measurement Levels,Threats And The Need For Conservation Of Biodiversity
		Explain The Different Types Of Pollution And Propose The Suitable Methods To Prevent The Same To Enhance The Environmnet
		Discuss The Different Types Of Natural Resources,Characteristics,Optimum Usage And Its Importance Of Conservation
		List The Various Social Issues,Environmental Protection Acts,Different Disasters And Possible Solutions T Protect The Environment For Sustainable Development
		Describe The Effects Of Population Explosion,Trend Of Population In Various Countries And Explain The Role Of It In Environment And Human Health
Programming in C	CS8251	Develop simple applications in C using Basic construct
		Design and implement applications using arrays and string
		Develop and implement applications in C using functions and pointer
		understand the usage of pointers with respect to functions and array
		Develop applications in C using structures
		Design applications using sequential and random access file processin
C Programming Laboratory	CS8261	develop C programs for simple applications making use of basic construct
		develop C programs for applications making use of arrays and string
		develop C programs involving functions,recursion
		develop C programs involving pointers and structures
		develop applications using sequential access file processin
		develop applications using random access file processin
Engineering Practices Laboratory	GE8261	Distinguish residential house wiring, fluorescent lamp wiring and stair case wiring
		Define electrical quantities like voltage, current, energy and resistance and their measurement using CR
		Analyse different logic gates, clock, rectifier and to solder devices and components
		Understand the pipe connections for the home application and industrial construction
		Do plan the real geometry of the shapes for industrial applications

		Understand the concept of connecting the metal by welding
Discrete Mathematics	MA8351	Have knowledge of the concepts needed to test the logic of a program
		Use proof techniques to check the truthfulness of a real life situation
		Be aware of a class of functions which transforms a finite set into another finite set which relate to input and output functions in computer science and counting principles.
		Use graph theory to formulate the problem and solve it
		Be exposed to concepts and properties of algebraic structure such as groups, rings and fields
		Analyse the basic knowledge gained by Lattices, Boolean algebra and apply them
Digital Principles and System Design	CS8351	Apply arithmetic operations in number systems and various techniques to simplify Boolean functic
		Build Combinational circuits that perform arithmetic operations and code code conversion
		Design Synchronous sequential circuits
		Design Asynchronous sequential circuits
		Model memory arrays for any Boolean function
		Learn basics of Hardware description language
Data Structures	CS8391	Learn stack,queue and implementations and their applications
		Learn the tree data structure and traversal and their types(Binary,AVL,B,B+) to solve various problem
		Explain graph,representation and its traversal
		Explain abstract data type,linked list implementations and its applications and operation
		Discuss the topological sort,graph connectivity and applications of graphs
		Implement sorting and searching algorithms,hash functions and open addressing
Object Oriented Programming	CS8392	Learn the Architecture of Java Environment and understand the role of JVM and JR
		Understand Object oriented concepts and basic characterstics of jav
		Know the principles of packages,inheritance and interface
		Define Exceptions and use I/O streams
		Develope java applications with threads and generics classes
		Design and build simple Graphical User Interfaces
Communication Engineering	EC8395	Comprehend and appreciate the significance and role of communication system in the present contemporary world and understand the analog modulation techniques
		Understand sampling theorem and various pulse modulation techniques and disseminate with variou multiplexing techniques
		Understand the key modules of digital communication systems with emphasis on digital modulation technique
		Analyze Source and Error control coding
		Realize the perception of advantages of Spread Spectrum techniques
		Gain knowledge on multi user radio communication techniques
Data Structures Laboratory	CS8381	Implement the linear data structures like list and stack using arrays and linked lis
		Implement the applications of linear data structures
		Implement the non linear data structure like tree and its traversal and application
		Implement the non linear data structure graph and its traversal and application
		Implement sorting and searching algorithms
		Implement various hash function
Object Oriented Programming Laboratory	CS8383	Develop and implement Java programs to develop simple applications
		Learn Features of Object oriented programming by developing programs using Classes,Packages and Interfaces.
		Design and implement java programs using Exceptions,Generics
		Develop java applications using multihreading
		Design and implement java programs using I/O Streams
		Learn to develop GUI programming and event handling using swing and awt classes
Digital Systems Laboratory	CS8382	Understand the various basic logic gates
		Verify the boolean theorems and expression
		Design and implement the various combinational circuit
		Design and implement combinational circuits using MSI device
		Design and implement sequential circuits
		Understand and code with HDL programming
Interpersonal Skills/Listening &Speaking	HS8381	Equip students with the English language skills required for the successful undertaking of academic studies wit primary emphasis on academic speaking and listening skills
		Provide guidance and practice in basic general and classroom conversation and to engage in specific academi speaking activities
		Improve general and academic listening skill
		To make the students familiar with native accent and communicative function
		To make the students to participate successfully in group discussion
		To enable the students to make effective presentation
		Define discrete and continuous random variables and to compute the expected values and moment generatin functions of discrete and continuous variables.
		Explain various distributions of discrete and continuous random variable

Probability and Queueing Theory	MA8402	Explain the joint distribution, Marginal distribution and to compute the correlation and the equation of lines o regression, to describe the transformation of two dimensional random variables.
		State and find WSS, SSS, autocorrelation, cross correlation, ergodic process and their properties and to identify and explain various process like Markov and Poisson processes.
		Distinguish and explain Markovian Models and to compute characters of Model
		Explain the basic concepts of queueing theory and Non - Markovian Queueing Model and compute characters of Models
Computer Architecture	CS8491	Understand the basics structure of computers, operations and instructions
		Design arithmetic and logic unit
		Understand pipelined execution and design control unit
		Understand parallel processing architectures
		Understand the memory hierarchies, cache memories and virtual memories
		Understand the various I/O communication system
Database Management Systems	CS8492	Study the fundamentals of data models and to represent a database systen
		Apply ER model to Relational model to perform database design effectively and to perform normalization in databases.
		Understand and analyze the fundamental concepts of transaction
		Compare and contrast various indexing strategies in different database system
		Illustrate and construct query optimization technique in database system
		Appraise the difference between advanced databases and traditional databases
Design and Analysis of Algorithms	CS8451	Analyze and understand the fundamentals of algorithmic problem-solvin
		Understand and Apply divide-and-conquer & brute-force design techniqu
		Understand and Apply Dynamic Programming technique & Greedy design techniqu
		Understand and Apply Iterative Improvement design techniqu
		Understanding and Analyzing the classifications of problem such as P, NP, NP-Hard, & NP-Complet
		Describing backtracking and branch and bound method of problem-solvin
Operating Systems	CS8493	Explain the basic concepts & functions of OS and discuss evolution and organisation of O
		Learn about processes and threads, their synchronization issues and analyse the various CPU scheduling algortihms
		Explain the deadlock characterization, handling, prevention, avoidance, detection and recover
		Explain Paging and segmentation, virtual memory and page replacement algorithm
		Discuss the disk storage management for file and directory, I/O System
		Study all the OS concepts for Linux OS and mobile OS-iOS and Androic
Software Engineering	CS8494	Explain the software process models and Agile methodology
		Analyze software requirements and SRS
		Outline the software design process and user interfac
		Demonstrate various software testing techniques and maintenanc
		Plan the project, select the process and handle risk
		Manage the project through proper estimation and scheduling
Database Management Systems Laboratory	CS8481	create and design the database using various constraints and cursor
		Apply PL / SQL procedures and functions for processing the databas
		Creation of database triggers and exceptions
		Analyze and implement applications that require a front end too
		Develop solution using database concepts, using real time requirement
		Design and implement the database schema for the given problen
Operating Systems Laboratory	CS8461	Implement Unix commands and basic shell program
		Implement various CPU scheduling algorithm
		Implement process creation and interprocess communicatio
		Implement deadlock avoidance and deadlock detection algorithm
		Implement page replacement algorithms
		Implement file organization and file allocation strategie
Advanced Reading and Writing	HS8461	Obtain the knowledge about Shell Programming and to implement on various CPU scheduling algorithm
		Attain knowledge about the different file allocation strategies and its Application
		Clear knowledge about the concepts Deadlocks with Bankers Algorithms
		Integrate information learned about the Page Replacement and Shared Memory to implement on Inter Proces Communication.
		Know how to manage the Memory Management and they know the advantage of Threading, Synchronizatio and its Applications.
		Clear knowledge about the Semaphores and to implement on various file organization technique
Algebra and Number Theory	MA8551	Apply the basic notions of groups which will then be used to solve related problems.
		Apply the basic notions rings, fields which will then be used to solve related problems.
		Demonstrate accurate and efficient use of advanced algebraic techniques.
		Understand the basic concepts in number theory
		Demonstrate their mastery by solving non-trivial problems related to the concepts, and proving simple theorems

		Apply integrated approach to number theory
Computer Networks	CS8591	Study OSI layer model, transmission media and different switching types
		Study the various protocols and technologies at the data link layer
		Understand the logical addressing and subnetting
		Study various routing algorithms and protocols
		Understand TCP and UDP
		Understand the working of various application layer protocols
Microprocessors and Microcontrollers	EC8691	Describe the architecture and organization of 8086 microprocessor
		Write structured understandable programs in assembly language using 8086.
		Understand techniques for interfacing I/O devices to the microprocessor including several specific standard I/O devices
		Describe the architecture, interrupt structure, Timer, counter of 8051 microcontroller
		Design of a microcontroller based minimal system for a particular application
		Design of Memory interfacing circuits
Theory of Computation	CS8501	Analyze and design finite automata
		Understand the key notions in regular language and Regular expression,computability through problem solving
		Understand and construct grammars and Pushdown Automata.
		Describe CFL and Normal Forms
		Describing the turing machine problems, solvable unsolvable problems.
		Explain the Decidability or Undecidability of various problems and analyze complexity
Object Oriented Analysis and Design	CS8592	Understand the fundamentals of object modelling
		Understand and differentiate Unified Process from other approaches
		Design with static UML diagrams
		Design with the UML dynamic and implementation diagrams
		Improve the software design with design patterns
		Test the software against its requirements specification
Soft computing	OEC552	Discuss soft computing techniques
		Explain supervised learning networks
		Explain Unsupervised learning networks
		Discuss Membership functions
		Generate Genetic algorithm
		Explain hybrid soft computing techniques
Microprocessors and Microcontrollers Laboratory	EC8681	Implement arithmetic and Logical operation, Code conversion, decimal arithmetic and Matrix operations using 8086
		Implement Floating point operations, string manipulations, sorting and searching using 8086
		Implement Counters and Time Delay, Password checking, Print RAM size and system date
		Implement Traffic light control, Stepper motor control and digital clock using 8086
		Implement Key board and Display, ADC, DAC, Serial interface and Parallel interface using 8086
		Implement Square and Cube program, Find 2¿s complement of a number and Unpacked BCD to ASCII using 8051
Object Oriented Analysis and Design Laboratory	CS8582	Capture the requirement specification for an intended software system
		Draw the UML diagrams for the given specification
		Map the design properly to code
		Test the software system thoroughly for all scenarios
		Improve the design by applying appropriate design patterns
		-
Networks Laboratory	CS8581	Learn various network related commands, topology and protocols
		Learn about error correcting codes
		Attain knowledge about the socket programming and its applications in websites
		Clear knowledge about the concepts of TCP and UDP sockets and its some of the applications
		Integrate information learned about network simulator OPNET with congestion control algorithm
		Analyze various routing algorithms
Distributed Systems	CS8603	Elucidate the foundations and issues of distributed systems.
		Understand the model of distributed computations and logical time.
		Understand the various synchronization issues and global state for distributed systems.
		Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems.
		Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
		Describe the features of peer-to-peer and distributed shared memory systems.
Internet Programming	CS8651	Construct Basic Websites using HTML and CSS
		Learn to Build Dynamic Webpages using Javascript.
		Developing serverside programs using Servlet
		Developing serverside programs using JSP
		Construct Simple Websites using PHP and represent data in XML format
		Use AJAX and webservices to develop interactive web applications

Artificial Intelligence	CS8691	Define and Describe AI and Intelligent agent, its characteristics and Problem solving approach
		Learn Problem formulation and algorithms like BFS,DFS, Hill Climbing and Heuristic functions and solve Constraint Satisfaction Problems
		Explain Game playing like MinMax and Alpha Beta Pruning and optimal decisions
		Learn the Knowledge representation and Resolution using Predicate Logic and Prolog Programming, Forward and Backward chaining. Describe the Ontological Engineering through categories, objects and events.
		Explain the architecture of Intelligent Agents, communication, negotiatiation, argumentation among multi-agents
		Describe the Information Retrieval & Extraction, Natural Language Processing Using AI and Robotics ¿its hardware, perception, planning and motion.
Mobile Computing	CS8601	Explain the Basics of Mobile Computing
		Learn the Basics of Mobile telecommunication
		Demonstrate the Adhoc Network concepts and its routing protocol
		Illustrate the MANET networks concepts and VANET Security Attacks
		Learn the basics of transport and application layer protocol
		Gain the knowledge about different mobile platforms and application development
Compiler Design	CS8602	Understand the different phases of compiler. Design a lexical Analyzer for a sample language
		Apply different parsing Algorithms to develop the parsers for a given grammar
		Design and implement a scanner and a parser using LEX and YACC tools
		Understand Syntax Directed translation and type checking
		Understand the concept of runtime environment
		Implement code optimization techniques and a sample code generator
Data Warehousing and Data Mining	CS8075	Understand Data warehouse concepts, Architecture and Business Analysis
		Understand Data Mining concepts, data pre-processing and data visualization techniques
		Study algorithms for finding hidden and interesting patterns in data
		Explore various classification algorithms, model evaluation and selection techniques
		Study various clustering algorithms and outlier analysis/detection methods
		Study about data mining tool such as WEKA Tool
Internet Programming Laboratory	CS8661	Design a webpage using HTML and CSS
		Understand and implement the use of socket for data transfer using various protocols.
		Understand and implement servlet(server side program) and to track the sessions and lock servlets
		Create 3 tier applications using servlet and JSP
		Understand the use of XML in web applications
		Create and publish their own webservices
Mobile Application Development Laboratory	CS8662	Understand the components and structure of mobile application development frameworks for Android and windows OS based mobiles.
		Understand how to work with various mobile application development frameworks.
		Learn the basic and important design concepts and issues of development of mobile applications.
		Understand the capabilities and limitations of mobile devices
		Develop basic application using GUI and Layouts,Event Listener Databases RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS
		Analyze and discover own mobile app for simple needs
Mini Project	CS8611	Gather and interpret technical literature to formulate a project proposal to solve challenging practical problems.
		Identify SDLC model and prepare software requirements specification.
		Design the software architecture.
		Apply modern tools for implementation using best coding practices and.testing at various levels of the project.
		Document the technical report on identified topic and present the ideas with effective communication skills
		Learn the concepts of project management and to work effectively as a member in team.

Principal

DEPARTMENT OF ECE
COURSE OUTCOMES (COs)

Programme: ECE **2017R**

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO) After the course, the student should be able to
COMMUNICATIVE ENGLISH	HS8151	Enable the learners to develop their basic communication skills in English based on LSRW skills.
		Inculcate the habit of reading and writing leading to effective and efficient communication.
		Read articles of general kind in magazines and news papers.
		Participate effectively in informal conversations; introduce themselves and their friends and express opinion in English.
		Comprehend conversations and short talks delivered in English.
		Write short essays of general kind and personal letters and emails in English.
ENGINEERING MATHEMATICS – I	MA8151	Understand the limit, continuity and derivative of the functions. Solve various functions and its maxima /minima using differentiation rules.
		Apply the total and partial derivatives in Taylor series expansion of functions and the extremum of functions.
		Evaluate the integrals both by using Riemann sums and by using the Fundamental theorem of Calculus. Evaluate integrals using various techniques of integration.
		Understand the concepts of double integration and determine the area using integration. Also understands the concepts of the change of order of integration and Change of variables in integrals.
		Understand the concepts of Triple integration and determine the volume using integration.
		Solve the linear equations of second and higher order with constant, and variable coefficients, simultaneous first order differential equations. Apply the method of variation of parameters and undertermined coefficients in solving the differential equation.
ENGINEERING PHYSICS	PH8151	Gain knowledge on the basis of properties of matter and its application.
		Adequate knowledge on the concepts of thermal properties of materials and their application in expansion joints and heat exchangers.
		Acquire knowledge on the concepts of waves and oscillations.
		Get knowledge on advanced physics concepts of quantum theory and application in tunneling microscopes.
		Acquire knowledge on the concepts of optical devices and their application in fibre optics.
		Understand the basics of crystals, their structure and different crystal growth techniques.
ENGINEERING CHEMISTRY	CY8151	Familiarize the students with boiler feed water, its requirements, related problems and water treatment techniques for industrial applications.
		Discuss the basics and principles of adsorption for industrial applications.
		Develop an understanding of the basic concepts of phase rule, its application to one/two component systems and appreciate the purpose and significances of alloys.
		Explain the different types of fuels, their synthesis and analysis.
		Analysis of combustion process and its calculations.
		Summarize the knowledge on various energy sources and different kinds of batteries.
PROBLEM SOLVING AND PYTHON PROGRAMMING	GE8151	Develop algorithmic solutions to simple computational problems
		Read, Write, execute by hand simple python programs
		Structure simple python programs for solving problems
		Decompose a Python program into functions
		Represent compound data using python lists, tuples and dictionaries
		Read and write data from / to files in python programs
ENGINEERING GRAPHICS	GE8151	Draw basic geometrical curves using free hand sketch
		Represent multiple orthographic views of an given object using free hand sketch
		Project points, lines and planes in first angle projection by rotating method
		Project inclined views of any given solids by rotating object method
		Project sectioned view and to develop lateral surface of given solid
		Sketch isometric and perspective views of given solid
PROBLEM SOLVING AND PYTHON PROGRAMMING LAB	GE8161	Write test and debug simple python programming.
		Implement python programs with conditional interrupts.
		Implement python programs with iterative statements.
		Develop python programs stepwise by defining function and calling function.
		Use python list, tuples, dictionaries for representing compound data.
		Read and write data from/to files in python.
		Acquire the knowledge of how to measure the wavelength, velocity, particle size and thickness of a thin object using the principles of interference and diffraction.

PHYSICS AND CHEMISTRY LAB	BS8161	Understand how to determine the modulus of the given material.
		Understand how to find the thermal conductivity and bandgap of the material using heat energy.
		Analyze the various water quality parameters like hardness, alkalinity and dissolved oxygen present in the water sample.
		Acquire practical skills by using instruments Conductivity meter, pH meter and Potentiometer.
		Find the molecular weight of a polymer by viscometer.
TECHNICAL ENGLISH	HS8251	Develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read technical texts and write area - specific texts effortlessly
		Listen and comprehend lectures and talks in their area of specialisation successfully
		Speak appropriately and effectively in varied formal and informal contexts
		Write reports and winning job applications
ENGINEERING MATHEMATICS - II	MA8251	Eigen values and eigenvectors,diagonalization of a matrix,symmetric matrices,positive definite matrices and similar matrices.
		Gradient,divergence and curl of a vector point function and related identities.
		Evaluation of line,surface and volume integrals using Guass,Stokes and Green¿s theorems and their verification.
		Analytic functions,Conformal mapping and Complex integration.
		Solve contour integration and Cauchy Residue theorem.
		Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.
PHYSICS FOR ELECTRONICS ENGINEERING	PH8253	Gain knowledge on classical and quantum electron theories, and energy band structuues
		Acquire knowledge on basics of semiconductor physics and its applications in various devices,
		Get knowledge on magnetic and dielectric properties of materials
		Understanding on the functioning of optical materials for optoelectronics,
		Understand the basics of quantum structures.
		Applications in spintronics and carbon electronics.
BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING	BS8254	Explain the operation of the three phase electrical circuits and power measurement.
		Discuss about the concepts of transformers and its application in power transmission and distribution.
		Describe about the operation of dc generator and dc motor concepts.
		Describe about the operation of induction machine, alternator, stepper motor and brushless dc motor concepts
		Discuss about the errors in measurements and different types of transducers
		Explain about electrical and electronic instruments in measurements
CIRCUIT ANALYSIS	EC8251	Apply Kirchhoff's current and voltage laws to simple circuits and Solve complex circuits using Mesh & Nodal Methods.
		Apply Network theorems to linear circuits and to solve simple and complex problems.
		Compute the Frequency response of Series and Parallel resonance and analyze tuned circuits.
		Estimate the Transient response of RLC circuits under DC and AC excitation using Laplace Transform
		Analyze and understand the behavior of two port networks
		Understand the difference between Z parameter, Y parameter, ABCD parameter and H parameter in two port networks
ELECTRON DEVICES	EC8252	Understand the construction, theory and operation of PN junction diode.
		Analyze the operation of transistor in Common base, Common Emitter and Common Collector configuration, V-I Characteristics and evaluate the hybrid parameters.
		Understand the construction, theory and principle of operation of JFET , MOSFET and their transfer and drain Characteristics
		Understand the principle of operation of special semiconductor devices and analyze the characteristics of those devices
		Understand the construction, theory and operation of power control devices such as thyristors and analyze the characteristics of thyristors.
		Understand the operation of LED, LCD, and other Opto-electronic devices and create circuits using various electronic devices and displays
CIRCUIT AND DEVICES LAB	EC8261	Understand the working principle and analyze the VI Characteristics of PN Diode and Zener Diode and also analyze the operation of clipper, clamper and Full Wave rectifier circuits.
		Understand the operation of transistor in Common base and Common Emitter configuration.
		Analyze the V-I characteristics of FET and SCR
		Construct suitable circuits to analyze the network theorems such as Thevinin’s and Norton’s Theorems.
		Construct suitable circuits to apply and analyze the KVL and KCL Theorems
		Analyse the frequency response of series and parallel circuits and understand the transient response of RL and RC circuit.
ENGINEERING PRACTICES LABORATORY	GE8261	Distinguish residential house wiring, fluorescent lamp wiring and stair case wiring.
		Define electrical quantities like voltage, current, energy and resistance and their measurement using CRO.
		Analyse different logic gates, clock, rectifier and to solder devices and components.
		Understand the pipe connections for the home application and industrial constructions.
		Do plan the real geometry of the shapes for industrial applications.
		Understand the concept of connecting the metal by welding.
LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL	MA8352	Introduce the basic notions of groups, rings, fields and Vector space which will then be used to solve related problems.
		Understand the concepts of linear transformations and diagonalization.
		Apply the concept of inner product spaces in orthogonalization.
		Understand the procedure to solve partial differential equations.

EQUATIONS		Understand the Dirichlet's conditions, the basic concepts in Fourier series and its problems.
		Application of Fourier series for solving the initial boundary value problem in one dimensional wave and heat equations and boundary value problems.
FUNDAMENTALS OF DATA STRUCTURES IN C	EC8393	Implement linear and non-linear data structure operations using C
		Suggest appropriate linear / non-linear data structure for any given data set.
		Apply hashing concepts for a given problem
		Modify or suggest new data structure for an application
		Choose the sorting algorithm for an application
		Create own application Programs
ELECTRONICS CIRCUITS I	EC8351	Design, construct and analyze the operations of circuits with transistor biasing
		Analyze the performance of small signal BJT amplifiers - single stage and multistage amplifiers
		Analyze the performance of small signal FET amplifiers - single stage and multi stage amplifiers
		Acquire knowledge of frequency response characteristics of BJT and FET amplifiers
		Acquire knowledge of Working principles, characteristics and applications of Rectifiers and Filters
		Apply the knowledge gained in the design of Regulators
SIGNALS AND SYSTEM	EC8352	Understand and apply the properties of signals and system.
		Understand, apply, evaluate and analyze Fourier and Laplace transform for continuous time signals.
		Apply, evaluate and analyze continuous time linear time invariant systems using Fourier and Laplace transforms.
		Apply, evaluate and analyze the role of Z transform and DTFT in signal analysis.
		Analyse the response of discrete time LTI systems using difference equations, impulse response and convolution.
		Apply, evaluate and analyze discrete time LTI systems using Z transform and DTFT.
DIGITAL ELECTRONICS	EC8392	Analyze different methods used for simplification of Boolean expressions.
		Design various combinational digital circuits using logic gates.
		Design synchronous sequential circuits.
		Design asynchronous sequential circuits.
		Use semiconductor memories and related technology.
		Understand different logic families involved in the design of logic gates.
CONTROL SYSTEM ENGINEERING	EC8391	Understand translation of physical phenomena into corresponding mathematical descriptions, and apply appropriate tools to interpret the behaviour of systems.
		Model physical systems, identify feedback control systems and exposed to the PID controllers prevalent in the Industry.
		Understand the frequency domain is a complementary point of view, and Illustrate control systems in frequency-domain.
		Develop classical graphical tools to interpret and design root locus and relate relative stability and transient performance for real time control system
		Design a suitable compensator for the given real time problem(motor controlled systems)
		Understand the concept of state variables and learns importance of linear algebra and matrix theory in designing practical control systems.
FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY	EC8381	Write a basic and advanced programs in c
		Implement functions and recursive functions in C
		Implement data structure concepts using C
		Create a new data structure for a real time applications
		Choose a appropriate sorting algorithm for an application and implement it in a modularized way
		Apply hashing concepts for given problem
ANALOG AND DIGITAL CIRCUITS LABORATORY	EC8361	Design, construct and analyze the operations of RPS, CE, CB,CC & CS Amplifiers
		Design, construct and analyze the operations of Darlington and Differential Amplifiers
		Design, construct and analyze the operations of Cascade and Cascode Amplifiers
		Simulate & Analyze the Characteristics of BJT, FET and MOSFET biasing techniques , Cascade & Cascode amplifiers using SPICE
		Design and implement Code converters, Adders & Subtractors , Multiplexers & Demultiplexers and Encoders & Decoders
		Design and implement Ripple Counters and Synchronous UP/DOWN counters
INTERPERSONAL SKILLS/LISTENING &SPEAKING	HS8381	Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills
		Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities
		Improve general and academic listening skills
		To make the students familiar with native accent and communicative functions
		To make the students to participate successfully in group discussion
		To enable the students to make effective presentations
PROBABILITY AND RANDOM PROCESS	MA8451	Have a fundamental knowledge of the basic probability concepts.
		Get exposure and a well-founded knowledge of standard distributions which can describe real life phenomena
		Acquire skills in handling situations involving more than one random Variable and functions of random variables
		Understand and characterize phenomena which evolve with respect to time in probabilistic manner.
		Study and solve problems on cross correlation and spectral density
		Analyze the response of random inputs to linear time invariant systems
ELECTRONIC		Understand, construct, evaluate and analyze the operations of different type of feedback amplifiers
		Evaluate and analyze the operations of different types of oscillators

ELECTRONIC CIRCUITS II	EC8452	Design, evaluate and analyze the operations of tuned amplifiers
		Design, evaluate and analyze the operations of wave shaping Circuits
		Design power amplifiers and DC Convertors
		Design Buck, Boost, Buck-Boost convertors
COMMUNICATION THEORY	EC8491	Plan and design AM communication systems and Angle modulated communication systems
		Plan and design Angle modulated communication systems
		Apply the concepts of Random Process to the design of Communication systems
		Analyze the noise performance of AM and FM systems
		Analog to digital conversion and to use the same for multiplexing techniques.
		Mathematically model any information source in a communication system
ELECTROMAGNETIC FIELDS	EC8451	Display an understanding of fundamental electromagnetic laws and concepts
		Analyze field potentials due to static charges and explain how materials affect electric fields.
		Analyze field potentials due to static magnetic fields and explain how materials affect magnetic fields.
		Write Maxwell's equations in integral, differential and phasor forms and explain their physical meaning, also analyze the relation between the fields under time varying situations
		Explain electromagnetic wave propagation in lossy and in lossless media.
		Discuss the principles of propagation of uniform plane waves
LINEAR INTEGRATED CIRCUITS	EC8453	Analyze the basic building blocks of linear integrated circuits.
		Design linear and non linear applications of OP – AMPS
		Design applications using analog multiplier and PLL
		Design ADC and DAC using OP – AMPS
		Generate waveforms using OP – AMP Circuits
		Analyze special function ICs
ENVIRONMENTAL SCIENCE AND ENGINEERING	GE8291	Infer the importance of environment and explain the concept, types, structure and functions of ecosystem
		Recall the various functions, different values, measurement, levels, threats and the need for conservation of biodiversity
		Explain the different types of pollution and propose the suitable methods to prevent the same to enhance the environment
		Discuss the different types of natural resources, characteristics, optimum usage and its importance of conservation
		List the various social issues, environmental protection acts, different disasters and possible solutions to protect the environment for sustainable development
		Describe the effects of population explosion, trend of population in various countries and explain the role of IT in environment and human health
CIRCUIT DESIGN AND SIMULATION LAB	EC8461	Design, construct and simulate various types of feedback amplifiers and also analyze the performances
		Design, construct and simulate the LC and RC Oscillators and analyze the performances
		Simulate the circuits of amplifiers and Oscillators and also analyze the characteristics
		Evaluate the circuit parameters of the tuned amplifiers and multivibrators using appropriate design formula and simulate them to analyze the performance
		Evaluate the design parameters of various wave-shaping circuits and simulate the same to analyze the performance of the wave shaping circuits.
		Design and create circuits for the simulation of feedback amplifiers, oscillators, tuned amplifiers, power amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.
LINEAR INTEGRATED CIRCUITS LAB	EC8462	Evaluate the circuit parameters, design and construct both Linear and Non linear applications using OPAMP IC741and analyze the performance metrics
		Evaluate the circuit parameters to construct the oscillators and amplifiers using operational amplifiers IC741 and analyze the performance of the same
		Evaluate the design parameters of the filters using Opamp IC741 and perform experiment for analyzing the frequency response
		Analyze the principle operation of PLL - construct a frequency multiplier circuit using PLL and R-2R Ladder Type D- A Converter using Op-amp
		Evaluate the design parameters of DC power supply circuits, construct and analyze the performance of power supply circuits using LM317 and IC723
		Analyze the performance of oscillators, multivibrators, A/D converters and Analog multipliers using SPICE simulation tool.
DIGITAL COMMUNICATION	EC8501	Understand and analyze the principles of Information theory and source coding techniques
		Evaluate and Analyze the characteristics of the various waveform coding schemes and also the measurement of parameters of those techniques
		Understand the procedure for the design of transmitter and receiver of various base band transmission schemes
		Understand the procedure for the design of transmitter and receiver of various band pass signaling schemes
		Analyze the spectral characteristics of band pass signaling schemes and their noise performance
		Understand the fundamental characteristics of channel coding and design of channel coders for various digital transmission techniques
DISCRETE-TIME SIGNAL PROCESSING	EC8553	Learn discrete Fourier transform, properties of DFT and its application to linear filtering
		Understand the characteristics of digital filters, design digital IIR and apply these filters to filter undesirable signals in various frequency bands
		Understand the characteristics of digital filters, design digital FIR and apply these filters to filter undesirable signals in various frequency bands
		Understand the effects of finite precision representation on digital filters
		Study the basic DSP Processor and its functionalities.

		Learn DSP programming concepts and real time applications of DSP
COMPUTER ARCHITECTURE AND ORGANIZATION	EC8552	Describe data representation, instruction formats and the operation of a digital computer
		Illustrate the fixed point and floating-point arithmetic for ALU operation
		Discuss about implementation schemes of control unit and pipeline performance
		Describe the concepts of various hazards in processor.
		Explain the concept of various memories, interfacing and organization of multiple processors
		Discuss parallel processing technique and unconventional architectures
COMMUNICATION NETWORKS	EC8551	Understand the overview of OSI model and the physical layer Functions
		Evaluate the required functionality at data link layer and Network layer
		Analyze various routing protocols of network layer
		Understand the transport layer functions and various congestion control techniques
		Analyze the QOS requirements for different types of networks
		Understand different application layer protocols
MEDICAL ELECTRONICS	EC8073	Understand the medical terminology relevant with biomedical instrumentation
		Understand various physiological parameters and the methods of amplification, recording and also the methods of transmitting these parameters
		Understand the principle of operations of various assist devices used in emergency units
		Understand the operation of equipments used for physical medicine and the various recently developed diagnostic and therapeutic techniques in physical medicine
		Analyze the elements of risks involved with different instruments and understand the basic electrical safety methods
		Understand the concepts of advanced techniques like cryogenics, therapeutic and surgical lasers etc used in medical fields
DIGITAL AUDIO ENGINEERING	OTL552	Understand and Analyze the sampling ,Quantization and type of Dither
		Analyze the Recording and transmission principles in digital audio
		Understand and Analyze the various compression techniques in digital Audio
		Design and analyze the digital audio editing
		Analyze the audio MPEG4,SDMI and MP3 of Digital Audio
		Understand the Internet Audio ,Sound Cards, MIDI
DIGITAL SIGNAL PROCESSING LABORATORY	EC8562	Analyse and carryout basic signal processing operations using MATLAB
		Performing spectral analysis using DFT / FFT Algorithms
		Design and Implement the FIR and IIR Filters using MATLAB
		Analyse the architecture of a DSP Processor
		Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
		Design a DSP system for various applications of DSP
COMMUNICATION SYSTEMS LABORATORY	EC8561	Demonstrate their knowledge in analog modulation like AM & FM with Sampling and multiplexing schemes through implementation
		Demonstrate their knowledge in base band signaling schemes through implementation of PCM and DM
		Demonstrate their knowledge in pass band signaling schemes through implementation of ASK, FSK, PSK, QPSK, QAM and DPSK
		Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system
		Simulate & validate the various functional modules of a communication system
		Simulate end-to-end Communication Link
COMMUNICATION NETWORKS LABORATORY	EC8563	Communicate between two desktop computers
		Implement the different protocols
		Program using sockets
		Implement and compare the various routing algorithms
		Use simulation tool for implementing congestion algorithm
		Analyse the performance of different networks using simulation tool.
MICROPROCESSORS AND MICROCONTROLLERS	EC8691	Describe the architecture and organization of 8086 microprocessor
		Write structured understandable programs in assembly language using 8086.
		Understand techniques for interfacing I/O devices to the microprocessor including several specific standard I/O devices
		Describe the architecture, interrupt structure, Timer, counter of 8051 microcontroller
		Design of a microcontroller based minimal system for a particular application
		Design of Memory interfacing circuits
VLSI DESIGN	EC8095	Realize the concepts of digital building blocks using MOS transistor
		Understand and analyze ideal, non ideal IV & DC characteristics of MOS transistors.
		Design combinational MOS circuits and power strategies.
		Design and construct Sequential Circuits and Timing systems.
		Design arithmetic building blocks and memory subsystems.
		Apply and implement FPGA design flow and testing.
WIRELESS COMMUNICATION	EC8652	Understand the characteristics of various Wireless Channels.
		Understand the concept of cellular architecture and evaluate grade of service.
		Understand and apply various digital signaling schemes on fading channels.
		Evaluate and analyze multi path mitigation techniques.

		Design and create systems with transmit and receive diversity based MIMO systems and analyze their performance.
		Understand the concept of fading and non-fading techniques.
PRINCIPLES OF MANAGEMENT	MG8591	Demonstrate Critical Thinking when presented with managerial problems & express their view of opinion on Managerial issues in an articulated way.
		Understand the major internal features of a business system & the environment in which it operates.
		Identify & explain the importance of the management process of identifying some of the key skills required.
		Understand the importance of delegation.
		Implement planning, organizing, directing, coordinating & Controlling activities in project/Career
		Understand the role of budget & finance in project.
TRANSMISSION LINES AND RF SYSTEMS	EC8651	Explain the characteristics of transmission lines and its losses
		Write about the standing wave ratio and input impedance in high frequency transmission lines
		Analyze impedance matching by stubs using smith charts
		Analyze the characteristics of TE and TM waves
		Design a RF transceiver system for wireless communication
		Analyze the characteristics of RF system using Smith chart
MULTIMEDIA COMPRESSION AND COMMUNICATION	EC8002	Understand the compression schemes for voice
		Understand the compression schemes for image
		Understand the compression schemes for text
		Understand the QoS issues in multimedia network
		Study the communication protocols for multimedia networking
		Compress image/voice/text and communicate through a communication system
CRYPTOGRAPHY AND NETWORK SECURITY	CS8792	Understand the mechanisms of attacks, network security models, classical encryption techniques and algorithms based on finite fields and number theory
		Understand, evaluate and analyze various block cipher and public key cryptography techniques
		Understand the concepts of authentication requirement, hash function and digital signatures
		Understand the security practices such as firewall, SET, Intrusion and virus related threats
		Understand and analyze the techniques of E-mail and IP security
		Understand and analyze the techniques of WEB security
MICROPROCESSORS AND MICROCONTROLLERS LABORATORY	EC8681	Implement arithmetic and Logical operation, Code conversion, decimal arithmetic and Matrix operations using 8086
		Implement Floating point operations, string manipulations, sorting and searching using 8086
		Implement Counters and Time Delay, Password checking, Print RAM size and system date
		Implement Traffic light control, Stepper motor control and digital clock using 8086
		Implement Key board and Display, ADC, DAC, Serial interface and Parallel interface using 8086
		Implement Square and Cube program, Find 2¿s complement of a number and Unpacked BCD to ASCII using 8051
VLSI DESIGN LABORATORY	EC8661	Apply HDL code for basic as well as advanced digital integrated circuits.
		Synthesize Place and Route the digital IPs.
		Import the logic modules into FPGA Boards.
		Design different analog hardware circuits using front and back end tool.
		Simulate to test the correctness of circuit using suitable tool & extract the layouts of Analog IC blocks.
		Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools
TECHNICAL SEMINAR	EC8611	Improve communication skill
		Explore technical knowledge in new thrust areas.
		Recognize the advances in technology so as to engage in independent and lifelong learning
		Communicate their contribution, individually or as a member or leader within a diverse team and in multidisciplinary disciplines
		Apply the knowledge of basics to review research literature and analyze complex engineering problems
		Apply reasoning in design solutions to solve the need for societal, health, safety and cultural issues
PROFESSIONAL COMMUNICATION	HS8581	Enhance the learners speaking skill through various activities like group discussion, telephonic conversation, presentation skill etc.,
		Develop listening and speaking skills through communicative functions
		Enhance the Employability and Career Skills of student
		Orient the students towards grooming as a professional
		Make them Employability Graduates
		Develop their confidence and help them attend interviews successfully.

Principal

CARE COLLEGE OF ENGINEERING

(Approved by AICTE, New Delahi and Affiliated to Anna University, Chennai)
TIRUCHIRAPPALLI - 620009

DEPARTMENT OF MECH
COURSE OUTCOMES (COs)

Programme:MECH **2017R**

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO) After th course, the student should be able to
COMMUNICATIVE ENGLISH	HS8151	Enable the learners develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read articles of general kind in magazines and news papers
		English
		Comprehend conversations and short talks delivered in English
		Write short essays of general kind and personal letters and e-mails in English
ENGINEERING MATHEMATICS - I	MA8151	using differentiation rules.
		Apply the total and partial derivatives in Taylor series expansion of functions and the extremum of functions.
		integrals using various techniques of integration.
		concepts of the change of order of integration and Change of variables in integrals.
		Understand the concepts of Triple integration and determine the volume using integration.
		order differential equations. Apply the method of variation of parameters and undertermined coefficients in solvir
ENGINEERING PHYSICS	PH8151	Gain knowledge on the basics of properties of matter and its applications
		Get knowledge on advanced physics concepts of quantum theory and its applications in tunnelling microscope
		Understand the basics of crystals,their structures and different crystal growth techniques
		joints and heat exchanger
		The students will acquire the knowledge in optical devices and their applications in fibre optics
		Acquire knowledge on the concepts waves and oscillatory motion
ENGINEERING CHEMISTRY	CY8151	for industrial applications.
		Discuss the basics and principles of adsorption for industrial applications.
		appreciate the purpose and significances of alloys.
		Explain the different types of fuels, their synthesis and analysis.
		Analysis of combustion process and its calculations.
		Summarize the knowledge on various energy sources and different kinds of batteries.
PROBLEM SOLVING AND PYTHON PROGRAMMING	GE8151	Develop algorithmic solutions to simple computational problems
		Read, write, execute by hand simple Python programs.
		Structure simple Python programs for solving problems.
		Decompose a Python program into functions.
		Represent compound data using Python lists, tuples, and dictionaries.
		Read and write data from/to files in Python Programs.
ENGINEERING GRAPHICS	GE8152	Develop the basic curvilinear geometric shapes and orthographic projections of various objects
		virtualize the projection of points, lines an planes in accordance with first angle projection
		Create the views projections of prisms and pyramids for different geometries
		represent the views of sectional solids and development of surfaces with different geometries
		Project the isometric and perspective views of various objects in different positions.
		Apply the concepts of engineering graphics in real world applications
PHYSICS AND CHEMISTRY LABORATORY	BS8161	the principles of interference and diffraction.
		The students will understand how to determine the modulus of the given material
		Understand how to find the thermal conductivity and bandgap of the material using heat energy
		sample.
		Acquire practical skills by using instruments conductivity meter, pH meter and potentiometer.
		Find the molecular weight of a polymer by viscometer
PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	GE8161	Write, test, and debug simple Python programs.
		Implement Python programs with conditional statements.
		Implement Python programs with iterative statements.
		Develop Python programs step-wise by defining functions and calling them.
		Use Python lists, tuples, dictionaries for representing compound data.
		Read and write data from/to files in Python.
TECHNICAL ENGLISH	HS8251	Enable the learners to develop their basic communication skills in English based on LSRW skills
		Inculcate the habit of reading and writing leading to effective and efficient communication
		Read technical texts and write area - specific texts effortlessly
		Listen and comprehend lectures and talks in their area of specialisation successfully
		Speak appropriately and effectively in varied formal and informal contexts

		Write reports and winning job applications
ENGINEERING MATHEMATICS - II	MA8251	similar matrices.
		Gradient of a scalar point funtion,divergent and curl of a vector point function and related identities.
		Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
		Analytic function,conformal mapping and bilinear transformation.
		Solve contour integration using Cauchys Residue theorem.
		differential equations with constant coefficients.
MATERIALS SCIENCE	PH8251	Have knowledge on the various phase diagrams and their applications
		Acquire knowledge on Fe-Fe3C phase diagram,various microstructures and alloys
		Knowledge on mechanical properties of materials and their measurement
		Gain knowledge on magnetic, dielectric and superconducting properties of materials
		Understand the basics of ceramics
		Understand the composites and Nano Materials
BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING	BE8253	Calculate total and branch current, voltage and power in a DC circuits for domestic and Industrial premises.
		Explain the types of loads and implementation of wiring
		Explain the working principle and operation of DC machines, AC machines, and Transformers
		Describe the concepts and use of PN diode, BJT, FET and Op-amp
		Explain the importance of transducer and its types.
		Select the appropriate instruments for electrical measurement for a specific application
ENVIRONMENTAL SCIENCE AND ENGINEERING	GE8291	Infer the importance of environment and explain the concept, types, structure and functions of ecosystem.
		biodiversity.
		environment.
		Discuss the different types of natural resources, characteristics, optimum usage and its importance of conservatior
		environment for sustainable development.
		environment and human health.
ENGINEERING MECHANICS	GE8292	Illustrate the vectorial and scalar representation of forces and moments.
		Analyse the rigid body in equilibrium.
		Evaluate the properties of surfaces and solids.
		Calculate dynamic forces exerted in rigid body.
		Determine the friction and the effects by the laws of friction.
		Distinguish translation and rotation of rigid bodies.
BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY	BE8261	experiment/machine
		Explain practically the concept of circuit laws
		Apply Thevenin, Norton, Superposition and Maximum power transfer theorem in electrical network
		Apply diode for rectification purpose in half wave and full wave rectifier
		Measure the three phase power and power factor, Explain the power factor measurement using CRO
		select appropriate measuring instruments for different applications
ENGINEERING PRACTICES LABORATORY	GE8261	Plan the real geometry of the shapes for industrial applications
		Distinguish residential house wiring, fluorescent lamp wiring and stair case wiring
		Define electrical quantities like voltage, current, energy and resistance and their measurement using CRO
		Understand the concept of connecting the metal by welding
		Analyse different logic gates, clock, rectifier and to solder devices and components
		Understand the pipe connections for the home application and industrial constructions
TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	MA8353	non linear partial differential equations.
		Analytical methods for solving higher order partial differential equations.
		identitiy and its problems
		The applications of Fourier series fro solving BVP in one dimensional wave and heat equations
		The concept of The concepts of Fourier Transform analyized and which are applied in engineering.
		The Mathematical technique of Z-Transform applied in engineering
ENGINEERING THERMODYNAMICS	ME8391	cycles and equilibrium and also zeroth law and First Law of thermodynamics
		systems and Mass and Energy transfer across control volume systems
		such as Carnot and the coefficients of performance for refrigerators
		of steam power cycles
		Explain the Ideal and Real gases behavior and thermodynamic relations
		Calculate the properties of moist air using Psychrometry charts
FLUID MECHANICS AND MACHINERY	CE8394	Apply mathematical knowledge to predict the properties and characteristics of a fluid
		analyse the boundary layer parameters
		calculate major and minor losses associated with pipe flow in piping networks.
		mathematically predict the nature of physical quantities
		critically analyse the performance of pumps
		critically analyse the performance of turbines.
MANUFACTURING TECHNOLOGY - I	ME8351	Understand about the green sand moulding process, gating system and riser design
		Explain the various special casting process and casting defects
		Understand the various welding process and its defects
		Explain various metal forming techniques and its issues
		Understand sheet metal operations and unconventional forming precess .2 .3 .4
		Understand various methods of manufacturing plastic components

ELECTRICAL DRIVES AND CONTROLS	EE8353	generation, speed control , regulation etc
		device for a motor
		dc motor and an ability e the real time products with those applications
		Awareness on different electronic speed control techniques for a AC motor
		applications
		application
MANUFACTURING TECHNOLOGY LABORATORY - I	ME8361	Demonstrate the safety precautions exercised in the mechanical workshop.
		Make the work piece as per given shape and size using Lathe and calculate the corresponding machining time.
		Convert round bar to square shape using vertical milling machine.
		Join two metals using arc welding.
		Use sheet metal fabrication tools and make simple tray and funnel.
		Use different moulding tools, patterns and prepare sand moulds.
COMPUTER AIDED MACHINE DRAWING	ME8381	Classify and illustrate the BIS specifications for metal joints.
		Explain the basic principles behind dimensions and tolerances in an engineering drawing.
		Apply different types of tools in 2-D drafting.
		Build bearings and valves with the help of various components.
		Choose different kinds of drawing tools in a 3-D modelling using CAD software.
		Construct the various machine components like couplings, joints, engine parts, miscellaneous components.
ELECTRICAL ENGINEERING LABORATORY	EE8361	speed
		Examine load characteristics of DC shunt, and series motor and identify its maximum efficiency operating point
		Examine the speed control techniques of DC shunt motor and three phase slip ring induction motor
		Sketch the load characteristics of single phase transformer, separate the different losses and find the efficiency
		Determination of regulation of Alternator and performance curves for synchronous motor
		xamine the types of starters and load test on three phase squirrel cage induction motor
INTERPERSONAL SKILLS / LISTENING & SPEAKING	HS8381	primary emphasis on academic speaking and listening skills
		speaking activities
		Improve general and academic listening skills
		Familiar with native accent and communicative functions
		Participate successfully in group discussion
		Make effective presentations
THERMAL ENGINEERING- I	ME8493	Apply thermodynamic concepts to different air standard cycles and solve problems.
		Solve problems in single stage and multistage air compressors
		Explain the functioning and features of IC engines, components and auxiliaries.
		Calculate performance parameters of IC Engines.
		Explain the working of Injection system, cooling system and lubrication system.
		Explain the flow in Gas turbines and solve problems.
ENGINEERING METALLURGY	ME8491	Understand the alloys and phase diagram, Iron-Iron carbon diagram and steel classification.
		Analyze the isothermal transformation, continuous cooling diagrams and different heat treatment processes
		Clarify the effect of alloying elements on ferrous and non-ferrous metals
		Summarize the properties and applications of non metallic materials.
		Study about polymers and ceramics
		Calculate the testing of mechanical properties.
STATISTICS AND NUMERICAL METHODS	MA8452	real life problems.
		Apply the basic concepts of classifications of design of experiments in the field of agriculture.
		differentiation and integration for engineering problems.
		differential equations.
		Solving first and second order differential equation susing various types of multistep methods.
		Applyig finite difference methods and solving first and second order differential equations.
KINEMATICS OF MACHINERY	ME8492	describe the various mechanisms and its applications
		compute velocity and acceleration of simple mechanisms
		design various types of cams
		define the terminologies and types of gears
		tabulate speed ratio and train values of various gear train
		evaluate the effect of friction on various machine elements
MANUFACTURING TECHNOLOGY - II	ME8451	understand the mechanism of material removal processes.
		describe the constructional and operational features of centre lathe and other special purpose lathes.
		describe the constructional and operational features of shaper, milling and drilling process.
		compare the attributes of various gear finishing processes.
		explain the types of grinding process and super finishing process.
		summarize the numerical control of machine tools and write a part program.
STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS	CE8395	understand the concepts of stress and strain in simple and compound bars.
		understand the importance of principal stresses and principal planes.
		moment.
		apply basic equation of simple torsion in designing of shafts and helical spring.
		calculate the slope and deflection in beams using different methods.
		analyze and design thin and thick shells for the applied internal and external pressures.
		determine the hardness, toughness and tensile strength of materials using IZOD test, Charpy test and using UTM.

STRENGTH OF MATERIALS AND FLUIDMECHANICS AND MACHINERYLABORATORY	CE8381	determine the deflection of beams and springs.
		understand the function of furnace and heat treatment process.
		apply the basic principle of flow measuring devices like orificemeter and venturimeter by hands on experience.
		understand the performance characteristics and performance curves of pumps and turbines.
		analyse the losses occurring during flow through pipes.
ADVANCED READING AND WRITING	HS8461	Strengthen the reading skills of students of engineering
		Enhance their writing skills with specific reference to technical writing.
		Develop students¿ critical thinking skills.
		Provide more opportunities to develop their project and proposal writing skills.
		Strengthen the vocabulary in order to make the students to be an effective communicator
		To make students to understand the different styles of writing.
MANUFACTURING TECHNOLOGY LABORATORY - II	ME8462	Understand the process parameters in various metal removal processes.
		Apply their practical knowledge in Vertical and Horizontal Milling.
		Analyse and Evaluate various types and principles of fabrication of Gears.
		Understand the Terminologies and Nomenclature of various cutting tools.
		Apply the fundamental concepts in the Measurement of Cutting forces.
		Understand and apply the G-Codes and M-codes in CNC Part Programming.
THERMAL ENGINEERING- II	ME8595	Apply thermodynamic concepts and solve problems in Steam Nozzles
		parameters
		Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems
		pumps and Heat exchangers
		Apply thermodynamic concepts to refrigeration systems and solve problems using refrigerant table / charts
		Apply thermodynamic concepts to air conditioning systems and solve problems using psychrometric charts
DESIGN OF MACHINE ELEMENTS	ME8593	machine components.
		loading conditions.
		Design the shafts, keys and couplings.
		Design the permanent and temporary fasteners.
		Calculate various dimensions of energy storing elements and engine components.
		Select the various bearings according to the applications and lubrication requirements.
METROLOGY AND MEASUREMENTS	ME8501	interchangeability.
		Analyse the various taper angle by angular measuring instruments with their uses and applications
		Describe the advanced measuring instruments like laser, CMM and interferometers.
		Calculate the difference between straightness, flatness and roundness measurements and their applications.
		Distinguish between the various measuring instruments for power, flow and temperature measurements.
		Explain the various measuring instruments its errors and ways to control it.
DYNAMICS OF MACHINES	ME8594	Calculate static and dynamic forces of mechanisms.
		Explain the working of flywheels and punching presses.
		Calculate the balancing masses and their locations of reciprocating and rotating masses.
		Compute the frequency of free vibration.
		Compute the frequency of forced vibration and damping coefficient.
		Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplane
INTERNAL COMBUSTION ENGINES	OAT552	Analyse air standard cycles and construction and working principles of IC engines
		Understand stages of combustion in S.I engines , combustion chambers,ignition system and S.I knocking
		Construction and working principles of diesel engines and types of injection system,types of injection nozzles
		Perceive the stages of combustion process,types of injection, combustion chambers in C.I engines
		Study of lubricants properties, Types of lubricants and cooling systems for IC engines
		Have exposure with modern concepts like CRDI,HCCI,GDI and Hybrid technology
KINEMATICS AND DYNAMICS LABORATORY	ME8511	appraise the principles in mechanisms used for speed control and stability control.
		describe the force motion relationship in components subjected to external forces.
		explain the working of flywheels and punching processes.
		describe the balancing of rotating and reciprocating masses.
		appraise the effect of free vibrations.
		explain the effect of forced vibrations.
THERMAL ENGINEERING LABORATORY	ME8512	Study the valve timing and port timing diagram
		Study the charecteristic of fuels / lubricants used in ic engines
		Conduct load test on single cylinder ic engine and to study the performance under hydraulic , electrical and mechanical loading
		Conduct heat balance test on ic engines
		Study the performance of steam generator/ turbine
		Study the performance of multi cyclinder ic engines
METROLOGY AND MEASUREMENTS LABORATORY	ME8513	Apply the tools and techniques of quality management to manufacturing and services processes.
		Knowledge on Gear inspection and profile measurements.
		Application of optics in measuring the profile of screw threads and flatness of surfaces.
		Use the comparator tools and gauges for quality inspection
		Knowledge to measure measurement of force and torque using sensor.
		Students will be able to measure surface roughness of machined surface.
		Apply heat conduction equations to different surface configurations under steady state conditions and solve proble
		Apply heat conduction equations to different surface configurations under transient conditions and solve problems

HEAT AND MASS TRANSFER	ME8693	surface configurations and solve problems.
		types of heat exchanger configurations and solve problems
		surfaces to solve problems
		Apply diffusive and convective mass transfer equations and correlations to solve problems for different application
DESIGN OF TRANSMISSION SYSTEMS	ME8651	Understand the basic concepts of transmission systems.
		Design flexible transmission components used in Engine and machines.
		Design spur gears and Helical gears used in Engine and machines.
		Design Bevel gears and worm gears used in Engine and machines.
		Understand the function of a gear box and its components and able to design gear boxes.
		Design cam, clutches and brakes for transmission system.
COMPUTER AIDED DESIGN AND MANUFACTURING	ME8691	Describe the product life cycle and design process and the role of CAD/CAM in it.
		Distinguish the various geometric modeling concepts and techniques in CAD.
		Choose the appropriate CAD standards in neutral file format and transfer.
		Formulate the G codes and M codes for Milling and Turning CNC part programming.
		Identify the group technology concepts and the coding schemes in it.
		Describe the formation of FMS and perform quantitative analysis in it.
FINITE ELEMENT ANALYSIS	ME8692	understand the principles and concepts of Finite Element Methods.
		implement the Finite Element Methods for simple 1-D problems such as Solid Mechanics, Heat Transfer and Vibrati
		appraise the second order 2-D equations involving scalar variable functions.
		describe the application of field problems such as Thermal, Torsion and Higher order elements.
		exposure the 2-D vector variable problems, Plane Stress, Plane Strain and Axi-symmetric elements.
		learn the isoparametric elements for 1-D and 2-D problems and solution techniques to dynamic problems.
HYDRAULICS AND PNEUMATICS	ME8694	Explain the fluid power and operation of different types of pumps
		Summarize the features and functions of hydraulic motors,actuators and flow control valves
		Explain the different types of hydraulic circuits and systems
		Explain the working of different pneumatic circuits and systems
		Summarize the various trouble shooting methods and application of hydraulic and pneumatic sytems
		Design of hydraulic and pneumatic circuits for various applications
GAS DYNAMICS AND JET PROPULSION	ME8096	Apply the concept of compressible flows in variable area ducts
		Apply the concept of compressible flows in constant area ducts with friction(Fanno flow)
		Apply the concept of compressible flows in constant area ducts with heat transfer(Rayleigh flow)
		concept of gas dynamics in Space Propulsion
		Students will be able to use the concept of gas dynamics in Jet Propulsion
		Apply the concept of gas dynamics in Space Propulsion
DESIGN AND FABRICATION PROJECT	ME8682	design the machine elements.
		design the mechanical product.
		fabricate the machine elements.
		fabricate the mechanical product.
		demonstrate the working model of the machine elements.
		demonstrate the working model of the mechanical product.
PROFESSIONAL COMMUNICATION	HS8581	presentation skill etc.,
		Develop listening and speaking skills through communicative functions
		Enhance the Employability and Career Skills of student
		Orient the students towards grooming as a professional
		Make them Employability Graduates
		Develop their confidence and help them attend interviews successfully

DEPARTMENT OF MECHANICAL
COURSE OUTCOMES (COs)

Programme: Engineering Design	**2017R**	
COURSE NAME	**COURSE CODE**	**COURSE OUTCOMES (CO)** **After the course, the student should be able to**
APPLIED MATHEMATICS FOR ENGINEERS	MA5156	Apply various methods in matrix theory to solve system of linear equations
		Maximizing and minimizing the functional that occur in various branches of engineering disciplines.
		Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable.
		Application of Laplace and Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations
ENGINEERING FRACTURE MECHANICS	ED5191	It helps the engineers to get familiarized with the design of components that contain crack under static load condition.
		It helps the engineers to get familiarized with the design of components that contain crack and its growth under fatigue load condition.
COMPUTER APPLICATIONS IN DESIGN	ED5151	It helps the students to get familiarized with the computer graphics application in design
		This understanding reinforces the knowledge being learned and shortens the overall learning curve which is necessary to solve CAE problems that arise in engineering
QUALITY CONCEPTS IN DESIGN	ED5152	It helps the students to get familiarized with various concepts in design, quality and reliability principles in the design of an engineering product or a service.
ADVANCED FINITE ELEMENT ANALYSIS	ED5153	The students will understand the Finite Element Formulation of Plate and Shell Elements and its application
		The students will be able to gain knowledge in material & geometric non-and plasticity.
		The students will be able to solve problems under dynamic conditions by applying various techniques
		The students can arrive at the solutions for fluid mechanics and heat transfer problems
		The students will acquire knowledge in error norms, convergence rates and refinement
		The students will solve the real world engineering problems using FEA.
CAD LABORATORY	ED5161	With laboratory classes, it helps the students to get familiarized with the computer applications in design and preparing drawings for various mechanical components
ADVANCED ANALYSIS AND SIMULATION LABORATORY	ED5162	Upon completion of this course, the Students can model, analyse and simulate experiments to meet real world system and evaluate the performance.
MECHANISMS DESIGN AND SIMULATION	ED5251	It helps the students to get familiarized with the advanced mechanisms which are necessary to design and simulate mechanisms.
MECHANICAL BEHAVIOR OF MATERIALS	ED5252	To familiarize the researchers in the area of material behavior under different loading and selection of materials for the design of engineering structures.
INTEGRATED MECHANICAL DESIGN	ED5253	This will familiarize the students with the concepts of integration of design of machines and structures.
VIBRATION ANALYSIS AND CONTROL	ED5254	This course will help the students to understand the basics of vibration and its importance in engineering field.
		The students are equipped with the working operations of various vibration measuring instruments, vibration control and analysis techniques.
VIBRATION LABORATORY	ED5261	Upon completion of the course students shall be able to: Derive the equations of motion for vibratory systems.
		Linearize nonlinear systems so as to allow a linear vibrational analysis. Compute the natural frequency (or frequencies) of vibratory systems and determine the system's modal response.
		Determine the overall response based upon the initial conditions and/or steady forcing input
		Design a passive vibration absorber to ameliorate vibrations in a forced system.
DESIGN PROJECT	ED5211	It helps the students to get familiarized with respect to design standards, design calculations and analysis in designing any mechanical component or system.
PRODUCT LIFECYCLE MANAGEMENT	PD5091	1.Understand history, concepts and terminology of PLM.
		2. Apply the functions and features of PLM/PDM.
		3. Understand different modules offered in commercial PLM/PDM tools.
		4. Understand PLM/PDM implementation approaches.
		5. Integrate PLM/PDM with other applications.
		6. Analyse the case studies.
PROJECT WORK PHASE I	ED5311	At the end of the course the students will have a clear idea of their area of work and they will be in a position to carry out the remaining phase II work in a systematic way.

PROJECT WORK PHASE II	ED5411	On completion of the project work students will be in a position to take up any challenging practical problem in the field of engineering design and find better solutions to it.

Principal

DEPARTMENT OF MBA
COURSE OUTCOMES (COs)

Programme:MBA **2017R**

COURSE NAME	COURSE CODE	COURSE OUTCOMES (CO) After the course, the student should be able to
Economic Analysis for Business	BA5101	Understand the basic concepts of Economics
		Explore the consumer and supplier behavior
		Acquire knowledge about the product market and factor market
		Understand the performance of the macro economics
		Explore the aggregate supply and role of money
		Understand the micro macro economic environment of business
Principles of Management - I	BA5102	Understand the management of an organization
		Explore the planning activities of an organization
		Understand organizational structures and functioning
		Explore the various issues of people management
		Understand the process of budget and controlling
		Expose the students to the basic concepts of management in order to aid in understanding how an organization functi
Accounting for Management	BA5103	Acquire a reasonable knowledge in accounts
		Explore the planning activities and the maintenance of accounts
		Understand and analyze the various framing of financial statements
		Explore the various pros and cons in the area of costs associated with production
		Understand the accounts in an computerized environment
		Expose the students to the basic concepts of accounts and to possess a managerial outlook at accounts
Legal Aspects of Business	BA5104	Understand the commercial act and sale of good act
		Explore the company law
		Understand the industrial laws
		Explore income tax and sales tax laws
		Understand the consumer protection and cyber laws
		Develop the Legal insight in the business practices according to the situation of changing environment
Organizational Behaviour	BA5105	Develop need, nature and framework of Organisational behaviour
		Understand human behavior and work behaviour
		Understand group behavior and interpersonal relationship
		Determine the importance of leadership and power
		Determine the dynamics of organizational behaviour
		Better understanding of human behaviour, framework for managing individual and group performance in organizatio
Statistics for Management	BA5106	Understand the basics concepts of statistics
		Explore the sampling techniques and estimation
		Understand the parametric tests
		Explore the non-parametric tests
		Understand correlation and time series analysis
		Facilitate objective solutions in business decision making under subjective conditions
Total Quality Management	BA5107	Understand the customer perception of quality
		Explore the principles of quality management
		Understand the statistical process control
		Explore the tools and techniques of Quality management
		Understand quality system management and implementation
		Apply quality philosophies and tools to facilitate continuous improvement and ensure customer delight
Spoken and Written Communication	BA5111	Get into the habit of writing regularly
		Express themselves in different genres of writing from creative to critical to factual writing
		Take part in print and online media communication
		Read quite widely to acquire a style of writing and Identify their area of strengths and weaknesses in writing
		Speak confidently with any speakers of English, including native speakers
		Speak effortlessly in different contexts – informal and formal
		Understand linear programming techniques
		Explore the extension of linear programming techniques

Applied Operations Research	BA5201	Understand the integer programming
		Explore the decision theory
		Understand the queuing theory
		Facilitate quantitative solutions in business decision making under conditions of certainty, risk and uncertainty
Business Research Methods	BA5202	Understand the basics of business research methods
		Explore the research design and measurement
		Understand the data collection methods
		Explore the data preparation and analysis
		Understand the report design and writing
		Become acquainted with the scientific methodology in business domain
Financial Management	BA5204	Understand the basics of financial methods
		Understand the operational nuances of a finance manager
		Comprehend the technique of making decisions related to finance function
		Explore the working capital determinants
		Understand the various long term sources of finance
		Possess the technique of managing finance in an organization
Human Resource Management	BA5204	Understand the perspective of human resources management
		Explore the best fit of employees
		Understand the training and executive development
		Explore the sustaining employee interest
		Understand the performance evaluation and control process
		Gain knowledge and skills needed for success as a human resources professional
Information Management	BA5205	Understand the importance of information in business
		Understand system analysis and design
		Understand the database management system
		Explore the security control and reporting
		Understand the new IT initiatives
		Gains knowledge on effective applications of information systems in business
Operations Management	BA5206	Understand the basics of operations management
		Understand forecasting, capacity and facility management
		Understand the design product and work systems
		Explore the materials management
		Understand the scheduling and project management
		Understanding of the strategic and operational decisions in managing manufacturing and service organizations
Marketing Management	BA5207	Develop on understanding of ideas & nuance of modern marketing
		Describe the process to formulate & mange the B2B marketing strategies including all key components
		Analyze the techniques to conduct marketing analysis including marketing segmentation & targeting
		Compare & contrast different perception that characteristic the study of consumer behavior
		Determine the role of IMC in the overall marketing program
		Determine the analytic skills in solving marketing related problems
Data Analysis and Business Modelling	BA5211	Understand the spreadsheet software for financial & other business applications requiring mathematical calculations
		Excel functions to summarize quantitative data graphically, including pivot tables and charts
		Understand the research problem and to carry out a statistical analysis that can test hypotheses
		Apply Bi variate and Multivariate tools and to prove the hypothesized model
		Forecast and to study the networking models which can be applied in the real time industry
		Hands on experience on SPSS
International Business Management	BA5301	Understand the international business basics
		Understand the international trade and investment
		Understand the international strategic management
		Understand the global business
		Understand the conflict management
		Expose the students to the basic concepts of international business management
Strategic Management	BA5302	Understand the basics of strategic and process
		Understand the competitive advantage
		Understand the different strategies
		Understand the strategy implementation
		Understand the other strategic issues
		Obtain knowledge and understanding of management concepts principles and skills from a people
Integrated Marketing Communication	BA5004	Understand the scope and objectives of Marketing
		Explore the range and reach of various media
		Understand the scope and objectives of sales promotion
		Understand the importance of PR and its tools
		Explore the scope of publicity through social media
		Access the importance of advertising and sales promotion campaigns planning and objective setting in relation to consumer dec making processes

Retail Marketing	BA5005	Understand about the importance of retail industry in India
		Differentiate the different types of retail formats
		Develop the decision making capability in Retail Management
		Understand the retail internal management system
		Analyse the decision making process of the customer
		Manage the retail chains and understand the retail customer's behavior
Services Marketing - I	BA5006	Understand the service economy
		Understand the service marketing opportunities
		Understand the service design and developmen
		Explore the materials marketing
		Understand the service strategies
		Apply the concepts of services marketing in promoting services
Banking Financial Services Management	BA5009	Understand the concept of Indian banking system
		Analyze the sources how they Raise their incomes and how they deploy it and its risks
		Understand the aspects of credit monitoring and the risk management
		Explore the risks and the threats related to e- banking
		Understand the other fund based financial services rendered by the banks
		Analyze the types of loans by the bank with risk profiles and to evaluate the performance of the banks
Corporate Finance	BA5009	Study the Nuances involved in short term corporate financing
		Study and evaluate the different sources of corporate finance
		Explain how the corporation's capital structure, payout policy and risk policy impact upon investment decisions
		Study about the various financing decisions such as cash inadequacy, cash insolvency, option pricing model, agency costs and Dividend decisions.
		Study the Good ethical practices in corporate finance
		Develop the students as Good ethical corporate manager
Security Analysis and Portfolio Management	BA5012	Understand the nuances of stock market operations
		Estimate the segments and the participants in the financial market
		Analyze the techniques involved in deciding upon purchase or sale of securities
		Explore the various market indicators and its benefits
		Understand the portfolio selection and the mutual funds
		Aims at becoming a good and skilled investment analyst
Entrepreneurship Development	BA5014	Familiarize overview of the competencies, personality traits and characteristics of Entrepreneurs
		Understand the Environmental factors affecting entrepreneurship and central and state government policies for SME's
		Understand about prefeasibility, feasibility, project preparation for stating a business enterprise
		Understand the various functions areas of Management ie Finance Marketing, HR and Operations management
		Understand monitoring of business, preventing of sickness, rehabilitation of business Enterprises
		Make the Students to gain knowledge and skills needed to run a busine
Industrial Relations and Labour Welfare	BA5015	Developing an understanding of ideas and nuances of Industrial relation
		Identify the major causes for industrial conflict
		Explain the labour welfare, kinds of training available for workers, voluntary welfare measure
		Explain the statutory health, welfare and safety provisions
		social security and social assistance provided for child labor, women labour, agriculture labour
		Make the Students to know how to resolve industrial relations and human relations problems and promote welfare of industrial
Labour Legislations	BA5016	Understand factory act
		Understand the payment of wages act
		Understand the industrial dispute act
		Understand workmen compensation act
		Understand the child labour prevention act
		Appreciate the application of labour laws
Logistics Management	BA5009	Understand the need and the importance of logistics in the product flow
		Analyze the design of distribution channels and the various outsourcing methods
		Understand the various transportation management and the packing process
		Explore the performance management measurement and the costs related to it.
		Understand the various technological developments made in the logistics field
		Enable an efficient method of moving the products with optimization of time and the costs.
Services Operations Management	BA5029	Familiarize the concept of Services and its role in econom
		Understand the concept of new service development.
		Explain the different dimension of service quality and service quality gap.
		Understand the concept of Servicescape framework and its environmental dimensions.
		Explain the concept of strategies of managing demand and capacity
		Design and operate a service business using the concepts, tools and techniques of service operations management
Supply Chain	BA5030	Understand business logistics and supply chain
		Understand the managing flows
		Understand the inventory and warehousing

Management	BA5030	Understand transporting and packing
		Understand the organization and control
		Gains knowledge on effective management of the logistics and supply chain
Project Work	BA5411	Demonstrate a sound knowledge of their selected project topic
		Undertake problem identification,formulation and solution
		Design solutions to complex problems utilising a systems approach
		Conduct an project
		Communicate with Management professionals and the community at large in written an oral forms
		Demonstrate the knowledge, skills and attitudes of a professional manager.
Summer Training	BA5311	Understand on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional entity
		Learn actual supervised professional experiences
		Get insight in working of the real organizations
		Understand the specific functional areas
		Match linkages among different functions and departments
		Understand perspective about business organizations in their totality

Principal

Vanitha R <vanithar@care.ac.in>

Fwd: Workshop on Examination Reforms

1 message

HOD ECE <hod.ece@care.ac.in> Wed, Feb 2, 2022 at 10:06 AM
To: Vanitha R <vanithar@care.ac.in>

---------- Forwarded message ---------
From: **Care Director** <director@care.ac.in>
Date: Wed, 2 Feb, 2022, 10:05 am
Subject: Fwd: Workshop on Examination Reforms
To: HOD ECE <hod.ece@care.ac.in>

Director
CARE College of Engineering
(Earlier CARE Group of Institutions)
27 Thayanur, Trichy - 620 009
0431-2690505
www.care.ac.in

---------- Forwarded message ---------
From: **Care Director** <director@care.ac.in>
Date: Tue, Jan 12, 2021 at 10:15 AM
Subject: Fwd: Workshop on Examination Reforms
To: Murali M. <mmurali@care.ac.in>, All HODs <hod@care.ac.in>, CARE Exam Cell <examcell@care.ac.in>, Ramadoss G <gramadoss@care.ac.in>

Sir,
All AsP and P are expected to register and attend the program. Other staff may attend through Youtube.
Thanks

Director
CARE Group of Institutions
www.care.ac.in

---------- Forwarded message ---------
From: **examreform FDC** <examreform@aicte-india.org>
Date: Mon, Jan 11, 2021 at 10:32 PM
Subject: Workshop on Examination Reforms
To:
Cc: <director.fdc@aicte-india.org>, <rps2012-13@aicte-india.org>

Dear Sir/Madam,

AICTE's Examination Reform Policy will not only improve the quality of Technical Education in general but also examine the effectiveness of earlier initiatives of AICTE

and also those on anvil. The same has already been released and is available on the website. Further, the sensitization of the same has also been carried out through various webinars.

Technical Institutions and Universities in the country have already been requested to adopt the Examination Reforms Policy. To facilitate this, Model Questions Paper and question bank will be developed/shared through AICTE by means of the present proposed workshop in association with Prof. Ashok Shettar, VC KLE Tech. Universities & his team (chairperson of the exam reforms policy committee).

The workshop is proposed to be of three days wherein the first two days exam reforms policy will be briefed followed by submission of questions as per the extant policy by the participants.

It has been decided to prepare a Model Question Paper and Question Bank through these workshops. In this regard a workshop is being organized on **15th, 16th & 18th January 2021**.

Only Associate Professors and above are requested to attend. The participants whose Question papers are approved during the workshop, will be issued with a certificate approved from AICTE.

Please find the following enclosed:

1. Link and Program Schedule for panelists.
2. Banner
3. Google form link - **All the participants are requested to fill-up the google form enclosed below**

Google Form link:
https://forms.gle/BPv3UH1utZbh4DUj7

Note: A Maximum of First 1000 attendees will be allowed at once through WebEx and later ones can watch the Live Event on AICTE's Youtube Channel **'MediaAICTE'** as mentioned below:
https://www.youtube.com/MediaAICTE

PS: All the participants are requested to attend the online workshop with the same email-id as provided by them in the Google form

Thanks and Regards,
Faculty Development Cell
All India Council for Technical Education(AICTE)
Nelson Mandela Marg, Vasant Kunj,
New Delhi -110070
Ph: 011-29581524
Email: examreform@aicte-india.org
Website: **www.aicte-india.org**

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2 attachments

EXAM REFORM BANNER.jpg
202K

Attendees 3 days Online AICTE Exam Reform Workshop Schedule.docx
18K

ALL INDIA COUNCIL OF TECHNICAL EDUCATION

Workshop on Examination Reforms

For the Faculty members of Engineering Colleges & Polytechnics recognized by AICTE in the State of KARNATAKA & TAMIL NADU

15th, 16th & 18th January 2021
10 AM Onwards

Dr. M.P. Poonia
Vice-Chairman
AICTE

Dr. Ashok Shettar
Vice Chancellor
KLE Technological University

/OfficialAICTE @AICTE_INDIA /MediaAICTE

3 DAYAICTE EXAMINATION REFORMS ONLINE WORKSHOP

Organized by
All India Council for Technical Education (AICTE) and KLE Technological University, Hubballi
on
15th to 18thJanuary 2021

Day #	Session #	Topics to be covered	Activities	LINK
Day 1 (15th Jan, Friday)	**Session – 1** **10.00 am to 11.30 am**	• Welcome address followed by talk by Hon,ble Vice Chairman AICTE, Prof. M.P. Poonia		https://aicteindia.webex.com/aicteindia/onstage/g.php?MTID=ed69af1114cf0178491729a776d26035c
		• Context setting by Prof. Ashok Shettar		
	Session – 2 **11.45 am to 1.15 pm**	• Need for outcome based education (OBE) • Understanding Graduate Attributes, Competencies and Performance Indicators	• Quiz to check understanding of OBE and Examination reforms • Writing and critiquing competencies and performance indicators (PI) for program outcomes.	
Day 2 (16th Jan, Saturday)	**Session – 3** **10.00 am to 11.30 am**	• Use of Bloom's Taxonomy for design of questions. • Examples on changing Bloom's Taxonomy levels of questions	Home Assignment: Design a semester end question paper for the subject you are currently teaching or already taught.	https://aicteindia.webex.com/aicteindia/onstage/g.php?MTID=e3c6efb2d4b38bb87dad733e30c67dee4
	Session – 4 **11.45 am to 1.15 pm**	• Use of Rubrics for assessment of professional outcomes • Assessment planning and preparation of SEE model question paper with CO, BL and PI.		
Day 3 (18th Jan, Monday)	**Session – 5** **10.00 am to 11.30 am**	• Question paper design and presentations	• Presentation by participants	https://aicteindia.webex.com/aicteindia/onstage/g.php?MTID=e5885172bd19424999a226a61788c8f98
	Session – 6 **11.45 am to 1.15 pm**	• Concluding remarks	• By presenters	

Note: Except session 1, all sessions will have Q&A time at the end

CARE COLLEGE OF ENGINEERING

(Approved by AICTE, New Delahi and Affiliated to Anna University, Chennai)
TIRUCHIRAPPALLI - 620009

Summer FDP, Phase-I, 25.4.17 to 27.4.17					
Date	**Session**	**Slot**	**Topic**	**Venue**	**Resource person**
25.4.17	FN	I & II	Power point	CS Lab.3	S.Kiruthika, CSE
25.4.17	AN	III & IV	Class room engagement	MBA Seminar Hall, II Floor	V.Stracey George, MBA
26.4.17	FN	I & II	Excel, Part.1	CS Lab.3	R.Alamelu, CSE
26.4.17	AN	III & IV	Case study based teaching	MBA Seminar Hall, II Floor	R.Venkatesh, MBA
27.4.17	FN	I	Excel, Part.2	CS Lab.3	S.Kiruthika, CSE
27.4.17	FN	II	MS word	CS Lab.3	R.Alamelu, CSE
27.4.17	AN	III & IV	Blooms Taxanomy	Seminar Hall, II Floor	K.Santhy, MECH
Slot-I : 9.15 to 11.00 a.m, Slot-II : 11.15 a.m to 1.00 p.m, Slot-III : 1.45 to 3.15 p.m, Slot-IV : 3.30 to 5.00 p.m					

Director

CARE

COLLEGE OF ENGINEERING

(Approved by AICTE, New Delahi and Affiliated to Anna University, Chennai)

TIRUCHIRAPPALLI - 620009

Winter 2019 FDP Schedule

Date	Time	Topic	Facilitator	Audience	Venue
11/18/2019	09:30-10:00	Opening remarks	Director	Beginners	THINKTANK
	10:00-11:15	Staff rules, HR Policies & Extended Staff Benefits	HR	Beginners	THINKTANK
	11:30-12:30	Regulatory Procedures and discussions	HR	Beginners	THINKTANK
	01:30-03:45	Balanced Behaviour for Teacher	Prof. Alex, St.Josephs College	All	FULCRUM
	04.00-05.00	CARE Academic Practices	Director	Beginners	THINKTANK
19.11.2019	02.00-03.45	CARE Academic Practices	Director	Beginners	THINKTANK
	04.00-05.00	Introductory Guidelines for fresh Faculty	Director	Beginners	THINKTANK
11/20/2019	09:30-10:00	Opening remarks	Director	All	FULCRUM
	10:00-11:30	Blooms Taxonomy	Dr.P.V.Premalatha	All	FULCRUM
	11:45-01:15	Enhancement of Fundamental Quality of Teaching	CEO	All	FULCRUM
	02:00-03:30	Knowing your Students	V.Stracey George	All	FULCRUM
	03:45-04:45	Class Room Management Strategies and Techniques	Dr.D.R.Rajkumar	All	FULCRUM
11/21/2019	09:30-11:00	Advice from an Experienced Teacher	Prof.S.Vijayarangan	All	BIZWALT
	11:15-12:30	Lecturing effectively (Workshop mode)	Dr.D.Sugumar	All	BIZWALT
	01:30-03:00	Using active learning in the class (Workshop mode)	V.Stracey George	All	BIZWALT
	03:15-04:45	Instructional Media & Campus resources	S.Sunil Allan	All	BIZWALT
11/22/2019	09:30-11:15	Faculty Presentation-1(Workshop mode)	CBS	All	BIZWALT
	11:30-01:00	Faculty Presentation-2(Workshop mode)	CBS	All	BIZWALT
	02:00-03:15	Testing & Assessment issues	Director	Senior staff	BIZWALT
	03:30-04:45	Improving your teaching with feedback	Dean	Senior staff	BIZWALT
	04.45-05.00	Concluding Remarks	CEO	All	BIZWALT

Director

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Director