

PERI INSTITUTE OF TECHNOLOGY

Mannivakkam

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES

Regulation 2013

SEMESTER: III

REGULATION: R2013

Course Code and Name: CS6302 Database Management Systems

SEM III	Course Name: CS6302 Database Management System	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6302.1	Design Databases for applications.
	CS6302.2	Use the Relational model, ER diagrams.
	CS6302.3	Apply concurrency control and recovery mechanisms for practical problems.
	CS6302.4	Design the Query Processor and Transaction Processor.
	CS6302.5	Design and Develop different type of databases

SEMESTER: IV

REGULATION: R2013

Course Code and Name: CS6403 Software Engineering

SEM IV	Course Name: CS6403 Software Engineering	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6403.1	Identify the key activities in managing a software project.
	CS6403.2	Compare different process models.
	CS6403.3	Concepts of requirements engineering and Analysis Modeling.
	CS6403.4	Apply systematic procedure for software design and deployment.
	CS6403.5	Compare and contrast the various testing and maintenance.

SEMESTER V

REGULATION: R2013

Course Name: COMPUTER GRAPHICS: CS6504

SEM V	Course Name: CS6504 Computer Graphics	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6504.1	Gain knowledge about graphics hardware devices and software used.
	CS6504.2	Design two dimensional graphics , Apply clipping techniques to graphics and Apply two dimensional transformations
	CS6504.3	Design three dimensional graphics and Apply three dimensional transformations.
	CS6504.4	Apply Illumination and color models.
	CS6504.5	Design animation sequences

SEMESTER VI**REGULATION: R2013****Course Name: Year of Study: CS6660 COMPILER DESIGN**

SEM VI	Course Name: CS6660 Compiler Design	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6660.1	Design and implement a prototype compiler
	CS6660.2	Understand of Lexical Analyzer
	CS6660.3	Understand & create Parsing
	CS6660.4	Apply the various optimization techniques
	CS6660.5	Apply the different compiler construction tools

SEMESTER VII**REGULATION: R2013****Course Name: Year of Study: CS6701: Cryptography And Network Security**

SEM VII	Course Name: CS6701: Cryptography And Network Security	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6701.1	Understand OSI security architecture and classical encryption techniques.
	CS6701.2	Acquire fundamental knowledge on the concepts of finite fields and number theory
	CS6701.3	Understand various block cipher and stream cipher models.
	CS6701.4	Describe the principles of public key cryptosystems, hash functions and digital signature.
	CS6701.5	Describe authentication, firewalls and intrusion

SEMESTER: VIII**REGULATION: R2013****Course Name: Year of Study: CS6801 Multi-Core Architectures & Programming**

SEM VIII	Course Name: CS6801: Multi-Core Architectures And Programming	
	Year of Study: 2016-2017	
	Students will be able to :	
	CS6801.1	Identify the limitations of ILP and the need for multicore architectures
	CS6801.2	Discuss the issues related to multiprocessing and suggest solutions
	CS6801.3	Point out the salient features of different multicore architectures and how they exploit parallelism
	CS6801.4	Program Parallel Processors
	CS6801.5	Develop programs using Open MP and MPI.
	CS6801.6	Compare and contrast programming for serial processors and programming for parallel processors.

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOMES

Regulation 2013

SEMESTER: III

REGULATION: R2013

Course Code and Name: CE6306 Strength Of Materials

SEM III	Course Name: CE6306 Strength Of Materials	
	Year of Study: 2016-2017	
	Students will be able to :	
	CE6306 1	Apply mathematical knowledge to calculate the deformation behavior of simple structures.
	CE6306 2	Critically analyse problem and solve the problems
	CE6306 3	Problems related to mechanical elements and analyse the deformation behavior for different types of loads.

Course Code and Name: ME6301 Engineering Thermodynamics

SEM III	Course Name: ME6301 Engineering Thermodynamics	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME63011	Apply the Thermodynamic Principles to mechanical Engineering Application.
	ME6301 2	Apply mathematical fundamentals to study the properties of steam
	ME6301 3	Apply mathematical fundamentals to study the properties of gas
	ME6301 4	Apply mathematical fundamentals to study the properties of gas mixture.

SEMESTER: IV

REGULATION: R2013

Course Code and Name: ME6401 Kinematics Of Machinery

SEM IV	Course Name: ME6401 Kinematics Of Machinery	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6401 1	Apply fundamentals of mechanism.

	ME6401 2	Design of new mechanisms
	ME6401 3	Design and analyse them for optimum design.

Course Code and Name: ME6403 Engineering Materials And Metallurgy

SEM IV	Course Name: ME6403 Engineering Materials And Metallurgy	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6403 1	Apply the different materials, their processing,
	ME6403 2	Heat treatments in suitable application.
	ME6403 3	Heat treatments in mechanical engineering fields..

SEMESTER V

REGULATION: R2013

Course Name: ME6504 Metrology And Measurements

SEM V	Course Name: ME6504 Metrology And Measurements	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6504 1	Demonstrate different measurement technologies
	ME65042	Students can use of them in Industrial Components

Course Name: ME6505 Dynamics Of Machines

SEM V	Course Name: ME6505 Dynamics Of Machines	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6505 1	Predict the force analysis in mechanical system.
	ME6505 2	Predict the vibration issues.
	ME6505 3	Solve the vibration problems

SEMESTER VI

REGULATION: R2013

Course Name: Year of Study:MG6851 Principles Of Management

SEM VI	Course Name: MG6851 Principles Of Management	
	Year of Study: 2016-2017	
	Students will be able to :	
	MG6851.1	Have clear understanding of managerial functions.
	MG6851.2	Know the planning, organizing, staffing, leading & controlling
	MG6851.3	Have Basic knowledge on international aspect of management

Course Name: Year of Study:ME6602 Automobile Engineering

SEM VI	Course Name: ME6602 Automobile Engineering	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6602.1	Identify the different components in automobile engineering.
	ME6602.2	Have clear understanding on different auxiliary systems.
	ME6602.3	Have clear understanding on transmission systems usual.

SEMESTER VII

REGULATION: R2013

Course Name: Year of Study:ME6701 Power Plant Engineering

SEM VII	Course Name: ME6701 Power Plant Engineering	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6701.1	Understand different types of power plant.
	ME6701.2	Functions of power plants.
	ME6701.3	Flow lines and issues related to power plants.
	ME6701.4	Analyse and solve energy and economic related issues in power sectors

SEMESTER VII

REGULATION: R2013

Course Name: Year of Study:ME6702 Mechatronics

SEM VII	Course Name: ME6702 Mechatronics	
	Year of Study: 2016-2017	
	Students will be able to :	
	ME6702 .1	Design of Mechatronics system with the help of Microprocessor.
	ME6702 .2	Design PLC and other electrical Circuits.
	ME6702 .3	Design PLC and other Electronics Circuits.

SEMESTER: VIII

REGULATION: R2013

Course Name: MG6863 Engineering Economics

SEM VIII	Course Name: MG6863 Engineering Economics	
	Year of Study:2016-2017	
	Students will be able to :	
	MG6863.1	Acquire the skills to apply the basics of economics and
	MG6863.2	Acquire the skills to apply cost analysis to engineering.
	MG6863.3	Take economically sound decisions.

Course Name: ME6016 Advanced I.C Engines

SEM VIII	Course Name: ME6016 Advanced I.C Engines	
	Year of Study:2016-2017	
	Students will be able to :	
	ME6016 .1	Compare the operations of different IC Engine and components.
	ME6016 .2	Evaluate the pollutant formation.
	ME6016 .3	Control pollutant formation and alternate fuel.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES

Regulation 2013

SEMESTER: III**REGULATION: R2013****Course Code and Name: EC6302 DIGITAL ELECTRONICS**

SEM III	Course Name: DIGITAL ELECTRONICS	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6302.1	Analyze different methods used for simplification of Boolean expressions.
	EC6302.2	Design and implement Combinational circuits.
	EC6302.3	Design and implement synchronous and asynchronous sequential circuits.
	EC6302.4	Write simple HDL codes for the circuits.

Course Code and Name: EC6303 SIGNALS AND SYSTEMS

SEM III	Course Name: EC6303 SIGNALS AND SYSTEMS	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6303.1	Analyze the properties of signals & systems
	EC6303.2	Apply Laplace transform, Fourier transform, Z transform and DTFT in signal analysis
	EC6303.3	Analyze continuous time LTI systems using Fourier and Laplace Transforms
	EC6303.4	Analyze discrete time LTI systems using Z transform and DTFT

SEMESTER: IV**REGULATION: R2013****Course Code and Name: EC6401 ELECTRONIC CIRCUITS II**

SEM IV	Course Name: EC6401 ELECTRONIC CIRCUITS II	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6401.1	Design and analyze feedback amplifiers.
	EC6401.2	Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time base generators.
	EC6401.3	Analyze performance of tuned amplifiers.

Course Code and Name: EC6402 COMMUNICATION THEORY

SEM IV	Course Name: EC6402 COMMUNICATION THEORY	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6402.1	Design AM communication systems.
	EC6402.2	Design Angle modulated communication systems
	EC6402.3	Apply the concepts of Random Process to the design of Communication systems
	EC6402.4	Analyze the noise performance of AM and FM systems

SEMESTER V**REGULATION: R2013****Course Code and Name: EC6501 Digital Communication**

SEM	Course Name: EC6501 - Digital Communication
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V	Year of Study: 2016-2017	
	Students will be able to :	
	EC6501.1	Students will be able to Design PCM systems
	EC6501.2	The students will be able to design and implement base band transmission schemes
	EC6501.3	The students will be able to design and implement band pass signalling schemes
	EC6501.4	The students will be able to analyze the spectral characteristics of band pass signalling schemes and their noise performance
	EC6501.5	The students will be able to design error control coding schemes

Course Code and Name: EC6502 - Principles of Digital Signal Processing

SEM V	Course Name: EC6502 - Principles of Digital Signal Processing	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6502.1	Apply DFT for the analysis of digital signals & systems
	EC6502.2	The students will be able to design IIR and FIR filters
	EC6502.3	The students will be able to analyze the characterize finite Word length effect on filters
	EC6502.4	The students will be able to design the Multirate Filters
	EC6502.5	The students will be able to apply Adaptive Filters to equalization

SEMESTER VI

REGULATION: R2013

Course Name: Year of Study:EC6601 –VLSI Design

SEM VI	Course Name: EC6601 –VLSI Design	
	Year of Study: 2016-2017	
	Students will be able to :	
	<u>EC6601.1</u>	Students will be able to explain the basic CMOS circuits and the CMOS process technology.
	<u>EC6601.2</u>	Students will be able to discuss the techniques of chip design using programmable devices.
	<u>EC6601.3</u>	Students will be able to model the digital system using Hardware Description Language.

Course Name: Year of Study:EC6602 –Antenna and Wave propagation

SEM	Course Name: EC6602 –Antenna and Wave propagation Year of Study: 2016-2017
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VI	Students will be able to :	
	<u>EC6602.1</u>	Students will be able to explain the various types of antennas and wave propagation.
	<u>EC6602.2</u>	Students will be able to write about the radiation from a current element.
	<u>EC6602.3</u>	Students will be able to analyze the antenna arrays, aperture antennas and special antennas such as frequency independent and broad band

SEMESTER VII
REGULATION: R2013
Course Name: Year of Study:EC6009 – Advanced Computer Architecture

SEM VII	Course Name: EC6009 – Advanced Computer Architecture	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6009.1	The students will be able to analyze the micro-architectural design of processors
	EC6009.2	The students will be able to analyze about the various techniques to power savings in processors
	EC6009.3	The students will be able to evaluate the performance of different architectures with respect to various parameters
	EC6009.4	The students will be able to analyze the performance of different ILP techniques
	EC6009.5	The students will be able to identify cache and memory related issues in multi-processors

Course Name: Year of Study:EC6701- RF & MW Engineering

SEM VII	Course Name: EC6701- RF & MW Engineering	
	Year of Study: 2016-2017	
	Students will be able to :	
	EC6701.1	Explain the active & passive microwave devices & components used in Microwave communication systems.
	EC6701.2	Analyze the multi- port RF networks and RF transistor amplifiers.
	EC6701.3	Generate Microwave signals and design microwave amplifiers.
	EC6701.4	Measure Microwave signal and parameters.
	EC6701.5	Analyze Microwave signal and parameters.

SEMESTER: VIII
REGULATION: R2013
Course Name: Year of Study: EC6801 WIRELESS COMMUNICATION

SEM VIII	Course Name: EC6801 WIRELESS COMMUNICATION	
	Year of Study:2016-2017	
	Students will be able to :	

	EC6801.1	Characterize wireless channels
	EC6801.2	Design and implement various signaling schemes for fading channels
	EC6801.3	Design a cellular system
	EC6801.4	Compare multipath mitigation techniques and analyze their performance
	EC6801.5	Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance

Course Name: Year of Study: EC6802 WIRELESS NETWORKS

SEM VIII	Course Name: EC6802 WIRELESS NETWORKS	
	Year of Study:2016-2017	
	Students will be able to :	
	EC6802.1	Conversant with the latest 3G/4G and WiMAX networks and its architecture.
	EC6802.2	Design and implement wireless network environment for any application using latest wireless protocols and standards.
	EC6802.3	Implement different type of applications for smart phones and mobile devices with latest network strategies.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES

Regulation 2013

SEMESTER: III

REGULATION: R2013

Course Code and Name: EE6301 - Digital Logic Circuits

SEM III	Course Name: EE6301 - Digital Logic Circuits	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6301.1	Understand the concepts of number systems, digital logic devices families and their characteristics.
	EE6301.2	Design the K-map representation and characteristics and implementation of combinational circuits.

	EE6301.3	Design the flip flop based digital circuit design, shift registers and counters.
	EE6301.4	Design the programmable asynchronous sequential logic circuits and programmable logic arrays
	EE6301.5	Design the combinational logic circuits and sequential logic circuits. Simulation with flip flops and counters

Course Code and Name: EE6302 - Electromagnetic Theory

SEM III	Course Name: EE6302 - Electromagnetic Theory	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6302.1	Have a clear idea about fundamental concept of magnetism such as Gauss law, coulomb's law and electric field intensity.
	EE6302.2	Understand the concepts of dielectric concepts, boundary conditions and design of capacitance conductors
	EE6302.3	Understand the concepts of magnetization, Bio-Savart's law, boundary conditions and classification of magnetic materials.
	EE6302.4	Visualize the concepts of electro dynamic time varying fields with maxwell's equations.
	EE6302.5	Analyze electrostatics in time varying fields as well as in transmission line & radiations.

SEMESTER: IV

REGULATION: R2013

Course Code and Name: EE6401 - Electrical Machines - I

SEM IV	Course Name: EE6401 - Electrical Machines - I	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6401.1	Have a clear idea about magnetic circuits and magnetic materials, induced emf and properties of magnetic materials.
	EE6401.2	Design the transformer characteristics and efficient calculation, three phase transformer designing.
	EE6401.3	Understand the concepts of energy in magnetic system, winding Inductances, magnetic fields in rotating machines and leakage fluxes.
	EE6401.4	Design the generator of construction and components of DC Machine, EMF equations, characteristics of DC generators.
	EE6401.5	Design and plot the characteristics of DC Motors , Plugging, dynamic and regenerative braking, Swinburne's test and Hopkinson's and DC Motor applications.

Course Code and Name: EE6402 - Transmission and Distribution

SEM IV	Course Name: EE6402 - Transmission and Distribution	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6402.1	Understand the concepts of structure of electric power system: generation, transmission and distribution; EHVAC and HVDC transmission.
	EE6402.2	Design the parameters of single and three phase transmission lines with single and double circuits, skin and proximity effects and corona discharges.
	EE6402.3	Obtain the basic characteristics of short line, medium line and long line Power circle diagrams and Ferranti effect.
	EE6402.4	Understand the concepts of Insulators, Types of cables, Grading of cables, Power factor and heating of cables and D.C cables.
	EE6402.5	Design of transmission line parameters, Tower spotting, methods of grounding.

SEMESTER V

REGULATION: R2013

Course Name: EE6501 - Power System Analysis

SEM V	Course Name: EE6501 - Power System Analysis	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6501.1	Understand the clear concepts about the system planning and operational, per phase and per unit analysis, construction of Y-bus and z-bus.
	EE6501.2	Solve the power flow analysis in planning and operation of power systems, iterative solution using Gauss-Seidel method and iterative solution using Newton-Raphson method.
	EE6501.3	Design the parameters of short circuit analysis using Thevenin's theorem.
	EE6501.4	Understand the design the sequence circuits of synchronous machine, analysis of single line to ground, line to line and double line to ground faults.
	EE6501.5	Analysis the classification and characteristics of Single Machine Infinite Bus (SMIB) system, solution of swing equation by modified Euler method.

Course Name: EE6503 - Power Electronics

SEM V	Course Name: EE6503 - Power Electronics	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6503.1	Understand the clear view about the power electronic basic devices Diode, SCR, TRIAC, GTO, BJT, MOSFET, and IGBT.
	EE6503.2	Design the 2-pulse, 3-pulse and 6-pulse converters, Effect of source inductance and Dual converters.
	EE6503.3	Design the characteristics of Step-down and step-up chopper, Switched mode regulators and Resonant Converters.
	EE6503.4	Design and implement the single phase and three phase voltage source inverters, Sinusoidal PWM, modified sinusoidal and space vector modulation.
	EE6503.5	Design and implement the single phase and Three phase AC voltage controllers single phase and three phase cycloconverters.

SEMESTER VI**REGULATION: R2013****Course Name: Year of Study: EE6601 - Solid State Drives**

SEM VI	Course Name: EE6601 - Solid State Drives	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6601.1	Understand the concepts of electric drive, steady state stability and typical load torque characteristics.
	EE6601.2	Design the steady state analysis of the single and three phase converter fed separately excited DC motor drive.
	EE6601.3	Design and implement the stator voltage control, v/f control and voltage / current fed.
	EE6601.4	Solve and plot the V/f control and self control of synchronous motor characteristics.
	EE6601.5	Design and implement the transfer function for DC motor and design of controllers characteristics.

Course Name: Year of Study: EE6603 -Power System Operation and Control

SEM VI	Course Name: EE6603 - Power System Operation and Control	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6603.1	Understand the clear idea about the power system operation and control, load, plant level and system level controls.
	EE6603.2	Design and obtain the basics of speed governing mechanism and , two-area system modeling and state variable model.
	EE6603.3	Visualize the concepts of generation and absorption of reactive power, tap-changing transformer, and STATCOM.
	EE6603.4	Formulate the economic dispatch problem, statement of unit commitment problem and forward dynamic programming.
	EE6603.5	View the computer control of power systems SCADA and EMS functions and Contingency Analysis.

SEMESTER VII**REGULATION: R2013****Course Name: Year of Study: EE6701 - High Voltage Engineering**

SEM VII	Course Name: EE6701 - High Voltage Engineering	
	Year of Study: 2016-2017	
	Students will be able to :	

	EE6701.1	Understand the concepts of causes of over voltages and its effects on power system, Corona and its effects.
	EE6701.2	Visualize the idea about the gaseous breakdown in uniform and non-uniform and Breakdown mechanisms.
	EE6701.3	Understand the generation of High DC, AC and Triggering and control of impulse generators.
	EE6701.4	Visualize and implement the concepts of high Resistance with series ammeter, Sphere Gaps and digital techniques.
	EE6701.5	Design the testing of electrical power apparatus as per International and Indian standards with high voltage ratings.

Course Name: Year of Study: EE6702 - Protection and Switchgear

SEM VII	Course Name: EE6702 - Protection and Switchgear	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6702.1	Understand the concepts of protective schemes: nature and causes of faults and Protection schemes.
	EE6702.2	Study the operating principles of relays, Over current and Under frequency relays.
	EE6702.3	Design and implement the current transformers and Potential transformers and protection of transformer and transmission line.
	EE6702.4	Understand the clear view about the static relays, Over current protection and distant protection of transmission lines.
	EE6702.5	Understand the concepts of physics of arcing phenomenon and arc interruption, Types and selection of Circuit breakers.

SEMESTER: VIII

REGULATION: R2013

Course Name: Year of Study: EE6801 - Electric Energy Generation, Utilization and Conservation

SEM VIII	Course Name: EE6801 - Electric Energy Generation, Utilization and Conservation	
	Year of Study: 2016-2017	
	Students will be able to :	
	EE6801.1	Understand and analyze power system operation, stability, control and protection.
	EE6801.2	Handle the engineering aspects of electrical energy generation and utilization.
	EE6801.3	Understand and implement the concepts of electric, arc furnaces and types of welding.
	EE6801.4	Visualize the concepts of solar radiation at the Earth's surface, transmissivity of cover system and performance analysis of concentrating collector.
	EE6801.5	Understand the concepts of wind energy conversion and types of wind Turbines.

Department of Civil Engineering

Course Outcomes (R-2013)

Semester / Year, Branch: 01 – 08, I – IV, B.E. Civil Engineering

Regulations: 2013

I Year (ODD SEMESTER)

HS6151 Technical English I

CO1	Explain clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
CO 2	Construct cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
CO 3	Organize different genres of texts adopting various reading strategies.
CO 4	Distinguish and comprehend different spoken discourses/excerpts in different accents.
CO 5	Improve listening to different accents, speeches and presentations.

MA6151 Mathematics I

CO 1	The students will be able to infer canonical form from quadratic form using the concepts of Eigen values and Eigen vectors.
CO 2	Students will be able to test the convergence of sequences and series.
CO 3	Students will be able to apply the techniques of differential calculus to find the evolute and envelope of curves.
CO 4	Students will be able to determine the maxima and minima of functions of two variables using partial derivatives.
CO 5	Students will be able to find the area enclosed by plane curves and volume of solids using multiple integrals

PH6151 Engineering Physics I

CO 1	Describe the crystal structures and various crystal growth techniques
CO 2	Analyze the elastic nature of materials and thermal behaviour of materials.
CO 3	Apply the knowledge of quantum mechanics and classical mechanics in addressing the problems related to science and technology.
CO 4	Apply the knowledge about designing an auditorium with good acoustical properties and make use of Ultrasonics and its applications in various fields.
CO 5	Illustrate the advantages of optical communication using LASER.

CY6151 Engineering Chemistry I

CO 1	Describe the methods of polymerization, types, properties and uses of polymers.
CO 2	Illustrate the concepts of basic thermodynamics and problem solving skills in various disciplines of Engineering.
CO 3	Discuss the laws of photochemistry in recognizing the interaction of light with matter and its applications in luminescence and spectroscopy.

CO 4	Review the use of phase rule in identifying its applications in metallurgy and alloys.
CO 5	Summarize the basic knowledge in Nanochemistry and distinguish the existing technology with nanotechnology.

GE6151 - Computer Programming

CO 1	Elaborate the organization of a digital computer and design the solution for simple computing problems using algorithm, flowchart and pseudo code
CO 2	Apply different looping structures to solve simple scientific and statistical problems
CO 3	Devise solutions for simple problems using array and strings
CO 4	Demonstrate the usage of Dynamic memory allocation and pointer variables
CO 5	Illustrate the concepts of structures and unions with example programs

GE6152 Engineering Graphics

CO 1	The students will be able to sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.
CO 2	Students will be able to apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.
CO 3	Students will be able to sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.
CO 4	Students will be able to practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces.
CO 5	Students will be able to sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.

GE6161 Computer Programming Laboratory

CO 1	Understand the usage of office automation tools.
CO 2	Apply good programming design methods for program development.
CO 3	Design and implement the C programs for simple applications.
CO 4	Develop and implement the recursive programs.
CO 5	Implement the c programs with the help of structures and unions.

EPL

CO 1	Construct carpentry components and pipe connections including plumbing works
CO 2	Use welding equipment's to join the structures
CO 3	Illustrate the basic machining operations.
CO 4	Construct the models using sheet metal works.
CO 5	Describe centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
CO 5	Construct the basic electrical and electronic circuits.
CO 5	Examine the different types of electronic circuits and components.
CO 5	Explain the electrical safety rules, grounding, general house wiring.
CO 5	Perform soldering in various electronic circuits.
CO 5	Illustrate the basic operation of domestic electrical appliances.

CO 1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
CO 2	Perform the quantitative chemical analysis of chloride and dissolved oxygen.
CO 3	Determine the amount of acids by using the instruments of conductivity meter and pH meter.

I

Year (EVEN SEMESTER)

HS6251 Technical English II

CO 1	Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies.
CO 2	Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.
CO 3	Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.
CO 4	Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings.
CO 5	Become accomplished, active readers and will be able to write effectively for a variety of professional and social settings.

MA6251 Mathematics II

CO 1	Students will be able to apply the knowledge of vector calculus in engineering disciplines
CO 2	Students will be able to solve ordinary differential equations that model the engineering problems
CO 3	Students will be able to find the Laplace transform of functions and solve the ordinary differential equations using Laplace transform
CO 4	Students will be able to construct analytic functions and apply the knowledge of conformal mappings in engineering disciplines
CO 5	Students will be able to evaluate contour integration and apply it in engineering problems

PH6251 Engineering Physics II

CO 1	Describe the conducting materials and their properties.
CO 2	Analyze the semiconductors and able to differentiate various types of semiconductors.
CO 3	Apply the knowledge of magnetic and superconducting materials for modern day to day applications.
CO 4	Explain the properties and applications of dielectrics.
CO 5	Apply the knowledge about the modern engineering materials for various applications.

CY6251 Engineering Chemistry II

CO 1	Describe water technology in the purification of water in domestic and industrial applications.
CO 2	Explain the principles of electrochemistry, the factors affecting corrosion and the prevention of corrosion.

CO 3	Classify the different alternative sources of energy and the generation processes.
CO 4	Enumerate the different types of engineering materials and their applications.
CO 5	Discuss the industrial techniques of petroleum processing and the determination of calorific values and combustion parameters.

GE6252 Basic Electrical and Electronics Engineering

CO 1	Apply the basic concepts of electric circuits and measuring instruments.
CO 2	Demonstrate the construction and working of various electrical machines.
CO 3	Illustrate the characteristics of various electronic devices.
CO 4	Explore the basics concepts in design of digital circuits.
CO 5	Explain the basics of different communication systems.

GE6253 Engineering Mechanics

CO 1	Determine the magnitude of force in rigid bodies under equilibrium conditions.
CO 2	Determine the resultant of the forces and moments of rigid body system under equilibrium conditions.
CO 3	Calculate the center of gravity, centroid and moment of inertia of surfaces and solids.
CO 4	Explain the differential principles apply to solve engineering problem dealing with force, displacement, velocity and acceleration.
CO 5	Solve the elements of rigid body dynamics subjected to frictional forces and dynamic forces.

GE6261 Computer Aided Drafting and Modelling Laboratory

CO 1	Use the software packages for drafting and modeling.
CO 2	Create 2D and 3D models of Engineering Components.

GE6262 Physics and Chemistry Laboratory – II,

CO 1	The students will have the ability to test materials by using their knowledge of applied physics principles in optics and properties of matter.
CO 2	Determine the hardness, alkalinity and metal ion content in the water samples by volumetric titration.
CO 3	Estimate the water quality parameters by potentiometer, conductometer and flame photometer.

Year (ODD SEMESTER)

MA6351 Transforms and Partial Differential Equations

CO 1	Solve the Partial Differential Equations.
CO 2	Determine the Fourier series expansion of functions and hence evaluate the value of infiniteseries.
CO 3	Apply the method of separation of variables to solve one dimensional wave equation, one dimensional heat equation and two dimensional heat equation
CO 4	Find the Fourier transform of functions and also evaluate definite integrals using Fourier transform.
CO 5	Calculate the Z-transform of discrete time systems and solve the difference equation using Z-transform.

GE6351 Environmental Science and Engineering

CO 1	Understand the importance of public awareness on environment and nature of biodiversity.
CO 2	Know about the various causes, effect and control measures of environmental pollution.
CO 3	Comprehend the human development that leads to environmental disasters, the value of natural resources and their conservation.
CO 4	Recognize the value of public participation in environmental protection, Environmental Management and Legislation Acts and sustainable development.
CO 5	Learn the problems related to population and their remedial measures.

CE6301 Engineering Geology

CO 1	Explain the importance of geology in civil engineering and the theory of plate tectonics.
CO 2	Enumerate the formation of minerals and identify the properties of minerals.
CO 3	Illustrate the formation of rocks and differentiate them based on their properties.
CO 4	Examine geological maps and identify the geological structures from the maps.
CO 5	Design and construction of engineering projects such as dams, tunnels and roads.

CE6302 Mechanics of Solids

CO 1	Define the fundamental concepts of stresses and strain in mechanics of solids.
CO 2	Analysis the beams and to draw shear force and bending moment diagrams.
CO 3	Compute the slopes and deflections of determinant beams using different methods.
CO 4	Find the stresses and deflections in various shafts and helical springs.
CO 5	Find the stresses and deflections in various shafts and helical springs.

CE6303 Mechanics of Fluids,

CO 1	Define fundamental concepts of fluid mechanics including hydro static forces on surfaces, pressure measurement, buoyancy and floatation.
CO 2	Apply Euler's and Bernoulli's equations and the conservation of mass to determine velocities,

	pressures, and accelerations for incompressible and in viscid fluids.
CO 3	Determine flow rates, pressure changes, minor and major head losses for viscous flows through pipes, ducts, simple networks and the effects of pumps, fans, and blowers in such systems.
CO 4	Develop the concepts of viscous boundary layers and the momentum integral and use them to determine integral thicknesses, wall shear stresses, and skin friction coefficients.
CO 5	Make use of principles of dimensional analysis and similitude to simple models using Dimensionless parameters.

CE6304 Surveying I,

CO 1	Identify error sources and the procedures to minimize the error.
CO 2	Compute the included angles in compass surveying and to convert the field observations into a small scale map using plane table surveying.
CO 3	Find the differences in elevation using different methods of leveling.
CO 4	Calculate the cross sectional areas and volumes using Contour methods
CO 5	Determine the elevation of the objects.

CE6311 Survey Practical – I

CO 1	Acquire practical knowledge on handling basic survey instruments including leveling and development of contour map on given area
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CE6312 Computer Aided Building Drawing

CO 1	Draw the plan, elevation and sectional views of the buildings, industrial structures and framed buildings using AutoCAD.
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Year (EVEN SEMESTER)

MA6459 Numerical Methods

CO 1	Solve the algebraic, transcendental and system of linear equations.
CO 2	Apply the interpolation and approximations in various problems.
CO 3	Find the differentiations and integration using numerical tools.
CO 4	Determine the solution of initial value problems for ordinary differential equations.
CO 5	Determine the Solution of boundary value problems in ordinary and partial differential equations.

CE6401 Construction Materials,

CO 1	Compare the properties of most common building materials such as stones bricks and concrete blocks.
CO 2	Interpret the fundamentals of construction materials and mainly focusing on cement, aggregate and mortar.
CO 3	Outline the importance of fresh and hardened concrete properties in the construction industry.

CO 4	Identify different materials such as plywood, steel and paint for use in various applications in the construction field.
CO 5	Explain the typical and potential application of modern construction materials.

CE6402 Strength of Materials

CO 1	Define the fundamental concepts of stress energy principles.
CO 2	Analysis of indeterminate beams and use of energy method for estimating the slope and deflections of beams and trusses.
CO 3	Assess the behavior of columns, beams and failure of materials.
CO 4	Find the principal stresses, principal strain and principal planes.
CO 5	Analyze bending of beams and curved beams.

CE6403 Applied Hydraulic Engineering- II

CO 1	Apply their knowledge of fluid mechanics in addressing problems in open channels.
CO 2	Solve problems in gradually varied flows in steady state conditions
CO 3	Apply the energy equation and momentum equation for rapidly varied flow.
CO 4	Analyze the performance of turbines.
CO 5	Describe the characteristic performance of a centrifugal pump and working principle of reciprocating pumps

CE6404 Surveying II

CO 1	Explain the different surveying methods.
CO 2	Apply corrections and adjust simple triangulation networks
CO 3	Understand total station surveying and its maintenance.
CO 4	Summarize the working principle, signal structure, components and error sources of GPS.
CO 5	Understand the fundamentals of route surveying, hydrographic surveying, astronomical surveying, photogrammetry and remote sensing.

CE6404 Soil Mechanics

CO 1	Determine Index properties, classify the soil and to select the suitable method to compact the particular soil mass.
CO 2	Calculate permeability of soil, seepage flow and seepage pressure.
CO 3	Understand the stress distribution in soil medium and to make use of Terzaghi's one dimensional consolidation theory to know the settlement characteristics of soil mass.
CO 4	Determine shear strength of cohesionless and cohesive soils and its measurement using laboratory methods.
CO 5	Identify the stability of infinite and finite slopes by applying the principles of soil mechanics.

CE6411 Strength of Materials Laboratory

CO 1	At the end of this course students would have acquired practical knowledge on testing various materials for its strength and components of structural experimentally
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CE6412 Hydraulic Engineering Laboratory,

CO 1	Measure flow in pipes and determine frictional losses
CO 2	Develop characteristics of pumps and turbines

CE6413 Survey Practical II, Year of study 2016-2017

CO 1	Handle survey instruments like theodolite, tacheometry and total station and have adequate knowledge to carryout triangulation astronomical surveying including general field marking for various engineering projects and curves setting.
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Year (ODD SEMESTER)

CE6501 Structural Analysis I

CO 1	Analysis indeterminate trusses and frames by energy and consistent deformation method.
CO 2	Analysis the determinate and indeterminate structures for moving load.
CO 3	Analysis the different types of arches.
CO 4	Conversant with slope deflection method.
CO 5	Conversant with moment distribution method

CE6502 Foundation Engineering

CO 1	Investigate the soil condition.
CO 2	Learn about types and purposes of different foundation systems and structures.
CO 3	Build the necessary theoretical background for design and construction of foundation systems
CO 4	Select type of foundation required for the soil at a place.
CO 5	Design shallow foundation, deep foundation and retaining structures

CE6503 Environmental Engineering

CO 1	Explain the basic concepts of water supply system and water quality characteristics.
CO 2	Compute hydraulics of flow in pressure pipes as gravity mains.
CO 3	Plan for the primary water treatment units.

CO 4	Summarize the concepts and terminologies of advanced water treatment units.
CO 5	Analyse the water distribution networks.

CE6504 Highway Engineering

CO 1	Explain the highway planning with respect to classification and know about the factors influencing highway alignment
CO 2	Interpret the geometric design fundamentals of highway and focusing on horizontal and vertical curves.
CO 3	Develop the road pavement design and analysis of flexible and rigid pavement.
CO 4	Identify the different materials to be used in different layers of road and suitable construction machineries.
CO 5	Explain the possible causes of defects and appropriate road monitoring and maintenance program

CE6505 Design of Reinforced Concrete Elements

CO 1	Explain the concept of elastic, ultimate load and limit state methods.
CO 2	Design of Reinforced concrete beams and slabs subjected to various boundary conditions.
CO 3	Analyze the behaviour of RC members subjected to shear and torsion.
CO 4	Design short circular and rectangular columns for axial, uniaxial and biaxial bending.
CO 5	Design axially and eccentrically loaded rectangular footing

CE6506 Construction Techniques, Equipment and Practice

CO 1	Apply the theoretical concepts of concrete technology in the real world construction techniques.
CO 2	Summarize the construction practices starting from sub structure to super structure using different materials and innovative techniques
CO 3	Explain the construction knowledge of sub structure element using techniques such as tunneling, piling, shoring for deep cutting and dewatering
CO 4	Find the different construction techniques for super structure construction
CO 5	Identify and select the construction equipment for earth work.

GE6674 -Communication & Soft Skills – Laboratory Based, Year of study 2017-2018

CO 1	Listen and interpret visuals, involve in formal and informal conversations, make presentations, and participate in GD.
CO 2	Solve reading comprehension passages of higher levels, draft Resume, cover letter, reports, emails, and write blogs.
CO 3	Possess knowledge about IELTS, TOEFL, GRE, and placement oriented verbal ability.
CO 4	Perform well in a job interview with the non-verbal and paralinguistic skills acquired.
CO 5	Exhibit leadership traits, team skills and essential soft skills and efficiency to excel as a professional.

CE6511 - Soil Mechanics Laboratory

CO 1	Able to execute how to measure the basic properties and engineering characteristics of soils.
CO 2	Able to practice how to use index and engineering properties in geotechnical designs.

CE6512 – Survey Camp, Year of study 2017-2018

CO 1	Acquire practical knowledge and handling survey instruments like theodolite, tacheometry and total station and have adequate knowledge to carryout triangulation and trilateration including general field marking for various engineering projects.
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Year (EVEN SEMESTER)

CE6601 Design of Reinforced Concrete & Brick Masonry Structures

CO 1	Design cantilever and counterfort retaining walls.
CO 2	Design rectangular and circular water tanks above and below the ground level.
CO 3	Design and draw the detailing of staircases & flat slabs and prepare bar bending schedule
CO 4	Apply the design principles of mat foundation, box culvert, road bridges and apply the concept of yield line theory for designing various types of slabs
CO 5	Analyze and design the brick masonry walls and continuous beams subjected to various load conditions.

CE6602 Structural Analysis II

CO 1	Explain the different types of indeterminacy and the use of compatibility conditions in analyzing indeterminate structures.
CO 2	Construct the element stiffness matrix and assemble the structure stiffness matrix for solving indeterminate problems
CO 3	Able to apply the concept of finite element method to the structural analysis.
CO 4	Calculate the collapse loads for beams and frames using plastic analysis.
CO 5	Determine the member forces in suspension bridges and space truss.

CE6603 Design of Steel Structures

CO 1	Explain the different failure modes of bolted connections for tension or compression members.
CO 2	Design the tension members.
CO 3	Analyze the most suitable section shape and size for a compression member as per provisions of current code (IS 800 – 2007).
CO 4	Design the beams and plate girders.
CO 5	Design the structural systems such as roof trusses, side coverings and gantry girders.

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CE6604 Railways, Airport and Harbour Engg

CO 1	Apply the fundamental concepts of railway planning and describe the engineering survey for track alignment.
CO 2	Explain the railway track construction, maintenance and able to find out the suitable method of tunneling.
CO 3	Describe the criteria for airport site selection and airport layout.
CO 4	Find the basic runway length required for an airport and explain marking and lighting for runway and taxiway
CO 5	Classify the harbour and describe the harbour requirements and various coastal structures.

CE6605 Environmental Engineering II

CO 1	Summarize the sewage characteristics and estimate sewage flow and runoff
CO 2	Compute hydraulics of flow in sewers and identify suitable pumps and pipes.
CO 3	Plan for the primary sewage treatment units
CO 4	Design the biological treatment units for sewages.
CO 5	Explain the sewage disposal methods and sludge management.

GE6075 Professional Ethics

CO 1	Apply ethics, morals and human values in society.
CO 2	Explain about engineering ethics
CO 3	Realize the responsibilities of engineers as experimenters.
CO 4	Recognize the safety, risks, risk benefit analysis and rights of an engineer
CO 5	Discuss the importance of the global issues, moral leadership and code of conduct.

CE6611 Environmental Engineering Laboratory

CO 1	Perform common environmental experiments relating to water and wastewater quality.
CO 2	Characterize wastewater conduct treatability studies
CO 3	Determine the amount of COD and COD present in the sample
CO 4	Estimate the amount of pollutant present in the waste water.
CO 5	Apply the laboratory results to the problem identification

CE6612 Concrete and Highway Engg. Laboratory

CO 1	Explain the properties of concrete and testing procedures.
CO 2	Measure the test values and compare the test results.
CO 3	Ensure quality control while testing/sampling and acceptance criteria
CO 4	Determine the properties of fresh and hardened concrete.
CO 5	Practice the usage of bitumen as pavement material in the highway engineering field.

Year (ODD SEMESTER)

CE6701 Structural Dynamics and Earthquake Engineering

CO 1	explain the fundamental concepts of static and dynamics in structural response.
CO 2	evaluate the equations of motion of multi degree of freedom system
CO 3	Illustrate the earthquake parameters, magnitude and intensity.
CO 4	Analyse the effect on reinforced cement concrete, steel and pre-stressed concrete structure under earthquake load.
CO 5	Design the structures for seismic loading as per code provisions IS: 13920-1993.

CE6702 Prestressed Concrete Structures

CO 1	Determine the suitable method of prestressing according to the requirements and calculate the various losses of prestress.
CO 2	design the Type I, Type II post-tensioned, pretensioned beams and shear based on IS code
CO 3	Determine the anchorage zone stresses in posttensioned beams and design the anchorage zone reinforcement.
CO 4	calculate the resultant stresses developed in composite beams and to analyse for the secondary moments
CO 5	design the various tension and compression members according to the requirements.

CE6703 Water Resources and Irrigation Engineering

CO 1	Estimate the reservoir capacity based on the water requirement for Irrigation and Drinking
CO 2	Identify the importance of National water policy and Economics of water resources planning.
CO 3	Calculate the water requirements of crops based on crop's base period and delta

CO 4	Explain about the Irrigation structures such as Dams and diversion head works.
CO 5	Differentiate different types of Irrigation methods.

CE6704 Estimation and Quantity Surveying

CO 1	Estimate the different item of work in residential building
CO 2	Estimate the different type of structure such as culvert, road work, sanitary and water supply works.
CO 3	Arrive the schedule of rates, tender, contract document.
CO 4	Valuate the building with depreciation.
CO 5	Prepare a report on estimate of residential building, culvert

CE6006 Traffic Engineering and Management (E II)

CO 1	Describe the Characteristics of Vehicles, Road users and the fundamentals of traffic flow.
CO 2	Examine about origin and destination, parking, accident studies and traffic forecasting.
CO 3	Describe the design of Traffic signals, signal coordination, grade separation and traffic signs
CO 4	Explain the road accidents, street lighting, traffic and environment hazards.
CO 5	Describe the Traffic System Management and the Intelligent Transport System.

CE6011 Air Pollution Management (E III)

CO 1	Explain the nature and characteristics of air pollutants and basic concepts of air quality management.
CO 2	Design stacks and particulate air pollution control devices to meet applicable standards
CO 3	Explain the gaseous pollutant control by adsorption, absorption, condensation and combustion
CO 4	Demonstrate the environmental impact assessment and air quality.
CO 5	Identify and solve noise pollution problems.

CE6711 Computer Aided Design and Drafting Laboratory

CO 1	Acquires hands on experience in design and preparation of structural drawings for concrete/steel structures normally encountered in civil engineering practice
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CE6712 Design Project

CO 1	Design engineering solutions to complex projects using fundamental knowledge, skills and attitudes of a professional engineer
CO 2	Identify project outcomes, constraints, deliverables, performance criteria, control needs, and resource requirements etc.
CO 3	Analyze the structure related to Civil Engineering design problems
CO 4	Interact with team members in a professional and ethical manner, respecting differences, to ensure a collaborative project environment
CO 5	Communicate effectively to present ideas clearly and coherently both in the written and oral forms

IV Year (EVEN SEMESTER)

MG6851 Principles of Management

CO 1	Discuss the evolution of management, functions and roles of managers
CO 2	Explain the different types of planning process and tools used for planning
CO 3	Elaborate different organization structures and functions of human resources manager
CO 4	Illustrate the different theories of motivation and leadership
CO 5	Describe the control techniques and the role of technology in management

CE6016 Prefabricated Structures

CO 1	Explain the prefabricated elements and also have the knowledge of the construction methods.
CO 2	Determine the importance and purpose of constructing the shear wall in building.
CO 3	Explain the design of cross section based on efficiency of the materials.
CO 4	Describe the different types of joints in precast connection.
CO 5	Determine the loads for considering abnormal effects such as earthquakes, cyclones, etc.

Repair and Rehabilitation of Structures

CO 1	Explain the concepts of Repair and Rehabilitation, importance of maintenance and Assessment procedure for evaluating a damaged structure.
CO 2	Apply the concept of durability aspects and properties of Concrete in damaged Structures.
CO 3	Identify the quality of concrete, causes of deterioration and effects of cover thickness.
CO 4	Explain the purposes of special concretes like Polymer concrete, Sulphur infiltrated concrete, Fibre reinforced concrete, High strength concrete, etc.,
CO 5	Identify the techniques for repair and protection methods and Acquire knowledge in techniques of Strengthening of Structural elements and Demolition.

CE8611 Project Work

CO 1	Design engineering solutions to complex projects using fundamental knowledge, skills and attitudes of a professional engineer.
CO 2	Identify project outcomes, constraints, deliverables, performance criteria, control needs, and resource requirements etc
CO 3	Demonstrate effective project execution that results in successful projects.
CO 4	Interact with team members in a professional and ethical manner, respecting Differences, to ensure a collaborative project environment.
CO 5	Communicate effectively to present ideas clearly and coherently both in the written And oral forms.

	Learn independently and synthesize knowledge from various areas of learning, and critically and creatively apply it to real life situations.
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 Name and Signature with seal of
 of the Head of the Institution
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