

2016-2017

CIVIL ENGINEERING

ACADEMIC YEAR 2016-17

ODD SEMESTER

S1 CE (2016 Batch)

Sl no	Course code	Subject name	Staff handled
1	MA 101	Calculus	Ms Manju
2	CY 100	Engineering Chemistry	Dr. Shalini
3	BE103	Introduction to Sustainable Engineering	Mr .Anoop M S
4	BE101-02	Introduction to Mechanical Engineering	Ms. Subi
5	BE110	Engineering Graphics	Mr. Dileepkumar C
6	CE100	Introduction to Civil Engineering	Mrs Greeshma
7	CY 110	Engineering Chemistry Lab	Dr. Shalini
8	ME110	Mechanical Engineering Workshop	Mr. Soman
9	CE110	Civil Engineering Workshop	Ms. Greeshma

S3 CE (2015 Batch)

Sl no	Course code	Subject name	Staff handled
1	MA201	Linear Algebra & Complex Analysis	
2	CE201	Mechanics of Solids	Siva I
3	CE203	Fluid Mechanics	Taniya Mary Boban
4	CE205	Engineering Geology	Tincy
5	CE207	Surveying	Anila
6	HS200/ HS210	Business Economics	Prof Rajan
7	CE231	Civil Engineering Drafting Lab	Manjusha
8	CE233	Surveying Lab	Anila
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S5 CE (2014 Batch)

Sl no	Course code	Subject name	Staff handled
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1	13.501	ENGINEERING MATHEMATICS	Mrs Liji
2	13.502	ENVIRONMENTAL ENGINEERING I	Ms Chandralekha
3	13.503	STRUCTURAL ANALYSIS II	Mrs Priya Grace
4	13.504	GEOTECHNICAL ENGINEERING I	Ms lekshmi
5	13.505	TRANSPORTATION ENGINNEERING I	Mrs Manjusha
6	13.506	WATER RESOURSE ENGINEERING	Mr Vishnu K
7	13.507	PRACTICAL SURVEYING II	MsAthira Raj
8	13.508	CT LAB	Mrs Najma
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S7 CE (2013 Batch)

Sl no	Course code	Subject name	Staff handled
1	13.701	Design of steel structures	Mr Vishnu K
2	13.702	Design and drawing of RC structure	Najma
3	13.703	Advanced structural analysis	Suji P
4	13.704	Air quality management	Sreehari
5	13.705	Ground improvement	Vishnu K
6	13.706	Environmental engineering lab	Dr Chithra
7	13.707	Geo technical engineering lab	Siva L krishna
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COURSE OUTCOME AND OBJECTIVE FOR S1

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

MA 101 CALCULUS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To give the definition of an infinite series and explain what is meant by the sequence of partial sums. Relate the convergence or divergence of the series to the sequence of partial sums.	Evaluate the limit of a sequence of numbers (infinite series) and determine whether the series converges.
2	Compute partial derivatives of functions of several variables. Apply the theorem on mixed partial derivatives.	Understand the meaning of partial derivatives and calculate partial derivatives.
3	Use concepts of calculus to the model real-world problems	Compute dot product, cross product, length of vectors. Compute partial derivatives, derivatives of vector-valued functions, gradient functions.
4	Evaluate volumes of bounded solids and areas of bounded regions by using the ideas of double and triple integrals.	To change a double integral to polar coordinate. Compute (relatively simple) triple integrals
5	Apply the concept of line integral to work and circulation. Know the definition and properties of conservative vector fields and their relationship to gradient fields.	Determine if a vector field is conservative and find a potential function if conservative. Evaluate line integrals in the plane and in space, including line integrals of vector fields.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CY 100 ENGINEERING CHEMISTRY**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To acquire knowledge about desalination of brackish water and treatment of municipal water.	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
2	To gain the knowledge of conducting polymers, bio-degradable polymers and fibre reinforced plastics.	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution. Design economically and new methods of synthesis nano materials.
3	To learn significance of green chemistry and green synthesis.	Have the knowledge of converting solar energy into most needy electrical.
4	To understand mechanism of corrosion and preventive methods.	Apply their knowledge for protection of different metals from corrosion. To prevents the monuments from getting corroded.
5.	To have an idea and knowledge about the Chemistry of Fuels.	Recent trends in electrochemical energy storage devices.
6.	To study different types of spectroscopy.	Learn how to use different spectroscopy techniques for analysis purpose of simple molecules.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
BE103 INTRODUCTION TO SUSTAINABLE ENGINEERING COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To have an increased awareness among students on issues in areas of sustainability.	Able to appreciate and explain the different types of environmental pollution problems and their sustainable solutions
2	To have an insight into global environmental issues.	To be aware of problem related to global environmental issues
3	To establish a clear understanding of the role and impact of various aspects of engineering and engineering decisions on environmental, societal, and economic problems.	Able to apply the concepts of sustainability in their respective area of specialization
4	To understand the role of engineering in achieving sustainable world	To understand the need of waste disposal and management

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
BE101 INTRODUCTION TO MECHANICAL ENGINEERING SCIENCES**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce different disciplines of Mechanical Engineering.	Enable students to distinguish different processes around them by applying knowledge in thermodynamics.
2	To kindle interest in Mechanical Engineering.	To explain the working of different energy conversion devices.
3	To impart basic mechanical engineering principles.	To differentiate between refrigeration and air conditioning devices and describe their working.
4		To recognize different parts of an automobile and explain their working.
5		To enumerate various engineering materials used in manufacturing industries.
6		Indicate the appropriate manufacturing method for production.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
BE 110: ENGINEERING GRAPHICS**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Increase ability to communicate with people.	To hand letter will improve.
2	Learn to sketch and take field dimensions.	To perform basic sketching techniques will improve.
3	Learn to take data and transform it into graphic drawings.	To draw orthographic projections and sections.
4	Learn basic Auto Cad skills.	To use architectural and engineering scales will increase.
5	Learn basic engineering drawing formats	To produce engineered drawings will improve
6	Prepare the student for future Engineering positions	To convert sketches to engineered drawings will increase.
		7. Students will become familiar with office practice and standards.
		8. Students will become familiar with Auto Cad two dimensional drawings.
		9. Students will develop good communication skills and team work.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CE100 BASIC CIVIL ENGINEERING**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To inculcate the essentials of civil engineering field to the students of all branches	The students will be able to illustrate the fundamental aspects of civil engineering
2	To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.	The students should able to plan a building
3		Students will be able to explain about surveying for making horizontal and vertical measurements.
4	.	They will able to illustrate the uses of various building materials and construction of different components of a building.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CY 110 ENGINEERING CHEMISTRY LAB**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To make students familiarize with the practical aspects of volumetric analysis of water samples and determine the parameters like alkalinity, chlorides and hardness.	To equip the students to apply the knowledge of Chemistry and take up Chemistry related topics as parts of their project works during higher semester of the course.
2	To improve the knowledge of different types of titrations used in volumetric analysis	To impart sound knowledge in the different fields of theoretical chemistry so as to apply it to the problems in engineering field. (b) To develop analytical capabilities of students so that they can characterize, transform and use materials in engineering and apply knowledge gained in solving related engineering problems
3	To make students develop in terms of practical skills required for analytical projects.	To develop abilities and skills that are relevant to the study and practice of Chemistry.
4	To study flash and fire point	To familiarize the students with different application oriented topics like new generation engineering material different instrumental methods etc.
		To enable the students to acquire the knowledge in the concepts of chemistry for

		engineering applications.
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
ME 110 MECHANICAL WORKSHOP**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Introduction to basic manufacturing process like welding, moulding, fitting, assembling, smithy, carpentry works etc.	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
2	Familiarization of basic manufacturing hand tools and equipment like files, hacksaw, spanner chisel hammers, etc.	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
3	Familiarization of various measuring devises like vernier height gauge, vernier caliper, micrometer, steel rule etc.	Able to choose different measuring devises according to the work.
4	Demonstration and study of various machine tools like lathe, drilling machine, milling machine etc.	Ability to name and summarise the operations of various machine tools like lathe, milling, drilling and shaping machines.
5	Familiarizing the disassembling and assembling of machine parts.	Knowledge achieved to disassemble and assemble the machine like IC engines.
6		Skill achieved to construct models by using basic mechanical workshop sections like

	welding, moulding, smithy, carpentry etc.
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CE110 CIVIL ENGINEERING WORKSHOP**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To inculcate the essentials of civil engineering field to the students of all branches.	The ability to practice civil engineering using up-to-date techniques, skills, and tools as a result of life-long learning ability to design and conduct experiments
2	To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.	An ability to design a system or component to satisfy stated or code requirements of Civil Engineering.
3	To develop awareness about the instruments used in civil engineering field work.	The students will be able to illustrate the fundamental aspects of civil engineering
4	.	The students should able to plan a building

COURSE OBJECTIVES AND OUTCOMES FOR S3

MA201 LINEAR ALGEBRA & COMPLEX ANALYSIS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Learn to work with vectors in two and three dimensions.	Compute the distance between points, the distance from a point to a line, and the distance from a point to a plane in the three-dimensional coordinate system. Perform algebraic operations with vectors in two and three dimensions, Find the length of a vector, Compute dot and cross product of vectors.
2	An understanding of Fourier Series and Laplace Transform to solve real world problems	Solve first-order linear or separable equations, finding both the general solution and the solution satisfying a specified initial condition.
3	Identify an ordinary differential equation and its order	Sketch and describe regions in space.

4	Verify whether a given function is a solution of a given ordinary differential equation (as well as verifying initial conditions when applicable)	Solve constant-coefficient, linear, homogeneous equations of higher order (especially second order) and find the solution satisfying specified initial conditions
5	Solve first order linear differential equations Find solutions of separable differential equations, Model radioactive decay, compound interest, and mixing problems using first order equations, Model population dynamics	Determine whether solutions of such an equation are linearly independent. Use the methods of undetermined coefficients and variation of parameters to solve nonhomogeneous equations equation

CE201 MECHANICS OF SOLIDS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Ability to calculate internal forces in members subject to axial loads shear torsion and bending and plot their distributions.	1. Work on problems in such disciplines as systems analysis, stress analysis, and in fields as diverse as transportation, environmental, structural, nuclear, and aerospace engineering..
2	.Ability to calculate normal, shear, torsion and bending stresses and strains.	2.This field has a wide range of applications, some examples of application of these subject in civil engineering field are to design foundations and structures
3	Ability to transform the state of stress at a point and determine the principal and maximum shear stresses using	3.The application of mechanics of solids enables the structural engineer to assemble elements, such as beams and columns, into a structure that will resist both static and

	equations as well as the Mohr's circle	dynamic loads, such as gravity, wind, snow and earthquakes.
4	Understanding of column buckling and ability to calculate critical load and stress	

CE203 FLUID MECHANICS 1

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Fluid mechanics describes all the physical laws that govern the flow of fluid and gases and	Understand the behaviour of fluids at rest as well as in motion and utilizing the principles develop in previous mechanics courses.
2	helps us to recognize the causes and effects of fluid flow through the determination of characteristic parameters like pressure field, velocity field in a fluid flow along with different properties of fluid like	Develop the principles and equations for pressure flow and momentum analysis

	density, viscosity and mainly an interrelation between these two and in different situation not only the flow of fluid but also the case when fluid is at rest.	
3		Provide the students with the analysis and design principles for water distribution and pressure flow system design (pressure flow, pumps and network analysis).
4		Illustrate and develop the equations and design principles for open channel flow, including sanitary and storm sewer design and flood control hydraulics. Introduce the varied flow principles and their application. Discuss the use of software-based solutions etc.
		Students will understand the working of different types of turbines and be able to design their parts such as blades, casing, draft tube etc.

CE205 ENGINEERING GEOLOGY

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart the knowledge of geology in order to fulfill the geological requirements in various fields of Civil.	Students will be benefited by the knowledge of dynamics of the earth, properties of rocks and minerals and the occurrence and distribution of ground water and the recent geo information technologies.
2	Engineering like Soil Mechanics, Rock Mechanics, Water Resources Engg, Environmental Engg, and Earthquake Engineering	Helps to determine the stability of earth surface
3	Helps to have deep knowledge about mineralogical aspect of rock body	The student would comprehend better the earth resources used as building material
4		
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CE207 SURVEYING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:

1	To understand the importance of surveying in the field of civil engineering	carry out preliminary surveying in the field of civil engineering applications such as structural, highway engineering and geotechnical engineering
2	To study the basics of linear/angular measurement methods like chain surveying, compass surveying	plan a survey, taking accurate measurements, field booking, plotting and adjustment of traverse
3	To study the significance of plane table surveying in plan making	use various conventional instruments involved in surveying with respect to utility and precision
4	To know the basics of levelling and theodolite survey in elevation and angular measurements	undertake measurement and plotting in civil engineering
5	To understand tacheometric surveying in distance and height measurements	plan a survey for applications such as road alignment and height of the building
	To get introduced to different geodetic methods of survey such as triangulation, trigonometric leveling	apply mathematical adjustment of accidental errors involved in surveying measurements
	To learn about errors in measurements and their adjustments in a traverse	plan a survey for applications such as road alignment and height of the building

HS200/HS210 BUSINESS ECONOMICS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
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		On completion of course the students will be able to:
1	To familiarize the prospective	Make investment decisions based on capital
2	engineers with elementary Principles	budgeting methods in alignment with
3	of Economics and Business	micro economic theories.
4	Economics.	
5	To acquaint the students with tools	Make investment decisions based on capital

CE231 CIVIL ENGINEERING DRAFTING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the students to draft the plan, elevation and sectional views of buildings in accordance with development and control rules satisfying orientation and functional requirements as per National Building Code.	The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, framed buildings using computer softwares.
2	The objectives of this course are to enable the students to understand the general concepts of engineering drawing and general principles on a CAD (particularly AUTOCAD provided by AUTODESK) and extend this knowledge to general use of CADs.	Use the AutoCAD® software program to create drawings from scratch and to modify, manipulate, copy, delete, save, and plot drawings.
3		Use the full range of AutoCAD® commands and options and employ shortcuts and time-saving strategies

CE233 SURVEYING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To equip the students to undertake survey using levels	After successful completion of the course, the students will be able to undertake survey using level
2	<input type="checkbox"/> To equip the students to undertake survey using theodolites	Surveying using theodolite
3	<input type="checkbox"/> To impart awareness on modern levels	Surveying using total station

COURSE OUTCOME AND OBJECTIVES FOR S5

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.501ENGINEERING MATHEMATICS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Learn techniques of complex analysis that make practical problems easy (e.g. graphical rotation and scaling as an example of complex multiplication);	Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers.
2	Continue to develop proof techniques; Appreciate how mathematics is used in design (e.g. conformal mapping);	Write complex numbers in polar form. . Compute exponentials and integral powers of complex numbers
3	Identify complex-differentiable function, Use the residue theorem	Explain the fundamental concepts of complex analysis and their role in modern mathematics and applied contexts
4	Present the concept of and methods of computing determinants	Demonstrate accurate and efficient use of complex analysis techniques
5	Present methods of computing and using eigenvalues and eigenvectors	Demonstrate ability to manipulate matrices and to do matrix algebra.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.502ENVIRONMENTAL ENGINEERING I

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To make the students conversant with sources and its demand of water	identify the source of water and water demand
2	To understand the basic characteristics of water and its determination	apply the water treatment concept and methods
3	To expose the students to understand the design of water supply lines	apply water distribution processes and operation and maintenance of water supply
4	To provide adequate knowledge about the water treatment processes and its design	prepare basic process designs of water and wastewater treatment plants collect, reduce, analyze, and evaluate basic water quality data
5	To have adequate knowledge on operation and maintenance of water supply	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.503 STRUCTURAL ANALYSIS II**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Analysis of indeterminate beams and frames by slope deflection method	Ability to define clearly and analyze the engineering problems by applying the introduced civil engineering concepts and theories of the related branch.
2	Analysis of indeterminate beams and frames without and with sidesway by using moment distribution method.	To enable the student get a feeling of how real-life structures behave
3	An ability to identify, formulate and solve engineering problems using slope deflection method.	Determine shear and moment functions and 3. Professional Competence diagrams for beams and frames.
4	An ability to identify, formulate and solve structural analysis problems using moment distribution method	Determine the forces and deflections of 3. Professional Competence structural members and frameworks using various analytical techniques.
5	An ability to identify, formulate and solve structural engineering problems to calculate deflection of trusses, beams and frames using Kani's method.	Use appropriate assumptions to perform approximate analysis and plastic hinge analysis of statically indeterminate beams and frames.

	To introduce the fundamentals of plastic analysis.	
	Analysis of indeterminate beams and frames by slope deflection method	

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.504 GEOTECHNICAL ENGINEERING I

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To explain what Geotechnical Engineering is and how it is important to civil engineering	carry out soil classification
2	To explain how three phase system is used in soil and how are soil properties estimated using three phase system	solve three phase system problems
3	To explain role of water in soil behavior and how soil stresses, permeability and quantity of seepage including flow net are estimated	solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram
4	To determine shear parameters and stress changes in soil due to foundation loads	estimate the stresses under any system of foundation loads
5	To estimate the magnitude and time-rate of settlement due to consolidation	solve practical problems related to consolidation settlement and time rate of settlement
6	To explain what Geotechnical Engineering is and how it is important to civil engineering	carry out soil classification
7	To explain how three phase system is used in soil and how are soil properties estimated using three phase system	solve three phase system problems
8	To explain role of water in soil behavior and how soil stresses, permeability and quantity of seepage	solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram

	including flow net are estimated	
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.505 TRANSPORTATION ENGINEERING I**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To know about the basics and design of various components of railway engineering	carry out the surveys for railways, airports and harbours
2	To study about the types and functions of track, junctions and railway stations	perform geometric design for the three modes
3	To learn about the aircraft characteristics, planning and components of airport	plan the layout of different types of terminals
4	To study about the types and components of docks and harbours	apply the principles of bus transit, MRTS and LRT
5	To know about various urban transportation systems and Intelligent Transportation Systems	demonstrate the fundamentals of Intelligent Transportation Systems

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.506 WATER RESOURCES ENGINEERING (C)**

SI NO	COURSE OBJECTIVES	SUBJECT LEARNING OUTCOMES OR COURSE OUTCOMES
		ON COMPLETION OF THE COURSE STUDENTS WILL BE THE ABLE TO:
1	To convey the knowledge on the causes of failure, design criteria and stability analysis of different types of dams	Determine reservoir capacity for design of irrigation systems
2	To impart knowledge regarding the design of the various minor irrigation structures	Compute the hydrostatic pressures and uplift.
3	To impart knowledge regarding design criteria of dams	Describe the diversion head works and estimate the different components
4	To communicate fundamental knowledge on reservoir engineering and river engineering	
5		Know the features of various river head works works
6		Know the features of design of canals through alluvial soils

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.507 PRACTICAL SURVEYING II**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To equip the students to undertake survey using levels	After successful completion of the course, the students will be able to undertake survey using level theodolite.
2	To equip the students to undertake survey using theodolites	the students will be able to undertake survey using level total station
3	To impart awareness on modern levels	
4	To equip the students to undertake survey using levels	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.508 CONCRETE TECHNOLOGY LAB**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the characteristics and behavior of civil engineering materials used in buildings and infrastructure.	Prove good understanding of concepts and their applications in the lab.
2	Students will learn standard principles and procedure to design prepare and/or test materials such as concrete mix design including field test methods for fresh concrete.	Write formal technical report & convey engineering message efficiently.
3	Know how to select materials based on their properties and their proper use for a particular facility under prevailing loads and environmental conditions.	Understand ethical issues associated with engr. experiments and professional practice.
4	Students will have exposure to practical applications including writing of a technical report related to each experiment.	Work in teams to perform experimental tasks.

5		Experimentally verify the assumptions made in the study of CE Materials.
6		Evaluate the strength and toughness properties

COURSE OBJECTIVES AND OUTCOME FOR S7

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.701 DESIGN OF STEEL STRUCTURES**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Learn the behaviour of structural steel components Ability to perform analysis and design of steel members and connections.	Identify and compute the design loads on a typical steel building.
2	Ability to design steel structural systems	Identify the different failure modes of steel tension and compression members and beams, and compute their design strengths.
3	learn the behaviour of structural steel components	Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria.
4	Familiarity with professional and contemporary issues	Identify the different failure modes of bolted and welded connections, and determine their design strengths.
5		Ability to analyze and design of tension members, columns, beams and simple bolted and welded connections
6		Apply relevant Indian Standard provisions to ensure safety and serviceability of structural steel elements.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.702 DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To develop an understanding of and appreciation for basic concepts in the behaviour and design of reinforced concrete systems and elements	1. Able to understand the general mechanical behavior of reinforced concrete in accordance with IS 456:2000.
2	To give an ability to differentiate between working stress design and limit state design.	2. Able to identify and apply the applicable industry design codes relevant to the design of reinforced concrete members.
3	To introduce the basic concepts and steps for reinforced concrete sectional design mainly in accordance with ultimate strength design.	3. Able to analyze and design with detailing of reinforced concrete flexural members.
4	To help the student develop an intuitive feeling about structural and material wise behaviour and design of reinforced concrete systems and elements.	4. Able to analyze and design for shear, torsion and bond for structural members.
		5. Ability to design and check for serviceability (crack and deflection) and ultimate limit state conditions. 6. Able to analyze and design with detailing for vertical and horizontal shear in reinforced concrete.
		7. Able to analyze and design with detailing of reinforced concrete compression

		members.
		8. Able to analyze and design with detailing for footings and able to analyze transfer and development length of concrete reinforcement.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.703 ADVANCED STRUCTURAL ANALYSIS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To enable the student to have a good grasp of all the fundamental issues in advanced topics in structural analysis	1. Students can appreciate the significance of analysis for design.
2	To equip the students with the force and displacement methods of structural analysis with emphasis on analysis of rigid frames and trusses.	2. Ability to analyze statically determinate trusses, beams, and frames and obtain internal loading
3	Understanding the analysis of statically determinate and indeterminate structures such as trusses, beams, frames and plane stress problems.	3. Ability to solve statically indeterminate structures using matrix method
4	Learn the concepts of the stiffness method and apply it to a variety of structural problems involving trusses, beams, frames, and plane stress.	4. Perform the structural analysis of determinate and indeterminate structures using classical compatibility methods, such as method of consistent deformations, force and equilibrium methods.
5	Student will be well prepared to explore and understand further topics like Finite Element Analysis.	5. Perform structural analysis using the stiffness method

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.704 ELECTIVE - I

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course provides an overview of air pollution, focusing on atmospheric physics and chemistry, and air quality issues.	1. After attending the course the students shall have acquired knowledge and understanding to evaluate air quality management and analyze the causes and effects of air pollution.
2	Students would get an insight into the dispersion of air pollution in the atmosphere.	2. Students would be able to understand the type and nature of air pollutants, the behavior of plumes and relevant meteorological determinants influencing the dispersion of air pollutants.
3	This life cycle of air pollution will enable the student to first identify the pollutants and their sources and then the transport mechanisms of the pollutants followed by the affected population and their control mechanisms.	3. The basic understanding of methods available for controlling point, line and area sources.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.705 ELECTIVE - II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
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		On completion of course the students will be able to:
1	To introduce the various types of improvement methods of engineering properties of soil.	1.know the different methods of ground improvement
2	To introduce the application of engineering methods to ground improvement projects.	2.Understand basics of soil compaction
3	To demonstrate how theoretical knowledge and observation of engineering performance assist in rational application of ground modification procedure	3.Talk to geotechnical engineers about ground improvement
4		4.Let you know basics of soil compaction
5		5.Soils are part of almost every civil engineering project

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.706 ENVIRONMENTAL ENGINEERING LAB

Sl.	Course Objectives	Subject Learning Outcomes or
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No.		Course Outcomes
		On completion of course the students will be able to:
1	To get an idea of sampling and preservation of water samples	Helps the students to characterize the water sample
2	To make an awareness on the importance of drinking water standards and its specified limits	Identify the importance of drinking water standards and their permissible limits
3	To get the practical experience in analysis of water samples	

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.707 GEOTECHNICAL ENGINEERING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	. Provide basic knowledge to carry out field investigations and to indentify soils in	Knowledge of site specific field investigations including collection of soil samples for testing and observation of soil behavior/ building damage.
2	Geotechnical engineering practice.	Identify the type of soil based on the soil classification tests like sieve analysis and hydrometer.
3	2. Educate students in performing and interpretating laboratory tests for evaluating subgrade	Be able to identify and classify soil based on standard geotechnical engineering practice.
4	performance and for pavement design.	Be able to perform laboratory compaction and in-place density tests for fill quality control.
5	3. Knowledge of and ability to perform laboratory tests needed to determine soil design parameters	Be able to perform and evaluate unsoaked california bearing ratio (cbr) tests used to estimate subgrade behavior during construction and beneath permanent structures.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

08.708 Seminar & Project ,Survey Camp& Industrial Training

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To improve the professional skill and competency of the students	Improves interpersonal communication skills
2	To understand the real problems in civil engineering construction site and to identify the solution	Able to analyse a problem and design a solution to the problem.
3	To study about a topic in trend, based on the literature survey in leading journals	Able to create a report on a new topic in trend based on the study and literature survey.
	To practice the use of survey	Improve their leadership quality as well as the ability to work in groups and aid them in building a successful career as a civil engineer

EVEN SEMESTER

S2 CE (2015 Batch)

Sl no	Course code	Subject name	Staff handled
1	MA102	Differential Equations	Ms. Manju
2	PH100	Engineering Physics	Ms. Sreeti Gangadaran
3	BE100	Engineering Mechanics	Mr. Sankar Ram K
4	BE102	Design & Engineering	Mr .Anoop M S
5	EC 100	Basics of Electronics Engineering	Mr. Prajeesh R
6	EE 100	Basics of Electrical Engineering	Ms. Karthika
7	PH 110	Engineering Physics Lab	Ms. Sreeti Gangadaran
8	EE110	Electrical Engineering Lab	Ms. Karthika
9	EC110	Electronic Engineering Lab	Mr. Prajeesh R

S4 CE (2013 Batch)

Sl no	Course code	Subject name	Staff handled
1	MA202	Probability Distributions, Transforms and Numerical Methods	Rakhi
2	CE202	Structural Analysis I	Priya
3	CE204	Construction Technology	Tincy
4	CE206	Fluid Mechanics- II	Taniya
5	CE208	Geotechnical Engineering- I	Athira Raj
6	HS210/HS200	Life Skills/Business Economics	Smith
7	CE232	Materials Testing Lab	Sheena
8	CE234	Fluid Mechanics Lab	Krishnadas
9			

S6 CE (2014 Batch)

Sl no	Course code	Subject name	Staff handled
1	13.601	DESIGN OF HYDRAULLIC STRUCTURES	Mr Vishnu K
2	13.602	DESIGN OF RC STRUCTURES	Mrs Suji p
3	13.603	ENVIRONMENTAL ENGINEERING II	Ms Chandralekha
4	13.604	GEOTECHNICAL ENGINEERING II	Ms Siva L
5	13.605	TRANSPORTATION ENGINNEERING II	Mrs Manjusha
6	13.606	COMPUTER PROGRAMMING AND NUMERICAL METHOD	Mrs Amitha S
7	13.607	TRANSPORTATION LAB	Chandralekha
8	13.608	CADD LAB	Najma
9			

S8 CE (2013 Batch)

Sl no	Course code	Subject name	Staff handled
1	13.801	Quantity Surveying & Valuation	Arunima
2	13.802	Design & Drawing of Steel Structures	Gayathri Suja
3	13.803	Urban Planning & Architecture	Chandralekha
4	13.804	Construction Management	Najma
5	13.805	Elective – III	Dr. Chithra
6	13.806	Elective - IV	Athira
7	13.807	Project and viva voce	Athira raj
8			
9			

COURSE OBJECTIVES AND OUTCOME FOR S2

COURSE OBJECTIVES AND COURSE OUTCOMES FOR MA 102 - DIFFERENTIAL EQUATIONS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To put it briefly, the point of this class is to take your existing knowledge of calculus and apply it towards the construction and solution of mathematical models in the form of differential equations.	Distinguish between linear, partial and ordinary differential equations. State the basic existence theorem for 1st order ODE's and use the theorem to determine a solution interval
2	Solve non-homogeneous linear equations with constant coefficients using the methods of undetermined coefficients and variation of parameters.	Recognize and solve a non homogeneous differential equation. Find particular solutions to initial value problems.
3	Introduce the Fourier series and its application to the solution of partial differential equation.	Find the Fourier series representation of a function of one variable.

4	To provide the student with the concept and the understanding of basics in Partial Differential Equations.	Knowledge in the Technic, methodology of solving Partial Differential Equations. A basic understanding in the Transforms which are useful in solving engineering problems.
5	This course introduces ideas of wave equation and heat equation which are widely used in the 43 modeling and analysis of a wide range of physical phenomena and has got applications across all branches of engineering.	At the end of the course students will have acquired basic knowledge of differential equations and methods of solving them and their use in analyzing typical mechanical or electrical systems.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
PH 100 ENGINEERING PHYSICS**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Dynamics of mechanical and electrical oscillation using Fourier series and integrals; time and frequency representations for driven damped oscillators, resonance; one-dimensional waves in classical mechanics and electromagnetism; normal modes.	Solve for the solutions and describe the behavior of a damped and driven harmonic oscillator in both time and frequency domains. Damped and Forced Oscillations oscillating system problems.
2	The fundamental principles of photonics that complement the topics in the optics and laser courses and to help students develop problem-solving skills applicable to real-world photonics problems.	Define and explain the propagation of light in conducting and non-conducting media.
3	Introduce basic concepts and	Define and explain the physics governing laser behaviour and light matter interaction ting and

	principles of acoustics.	non-conducting media.
4		Apply wave optics and diffraction theory to a range of problems
5		Explain and calculate the physical effects of acoustic reflections, absorption, scattering, diffusion, diffraction, and propagation losses.
6		Use advanced theoretical, numerical, and experimental techniques to model and analyze acoustical elements in musical instruments, the human voice, room acoustics, and audio.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
ENGINEERING MECHANICS COURSE (BE-100)**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To apply the principles of mechanics to practical engineering problems.	Understand the fundamental concepts of mechanics.
2	To identify appropriate structural system for studying a given problem and isolate it from its environment.	Students would be able to apply and demonstrate the concepts of resultant and equilibrium of force system.
	To develop simple mathematical model for engineering problems and carry out static analysis.	Students would be able to determine the properties of planes and solids.
4	To develop simple mathematical model for engineering problems and carry out static analysis.	Understand the concepts of moment of inertia.
5		Students would be able to apply fundamental concepts of dynamics to practical problems.
6		Understand the basic elements of vibration.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

BE 102 DESIGN AND ENGINEERING COURSE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To excite the student on creative design and its significance	To appreciate different elements involved in design and to apply them when they called for.
2	To make the student aware of the processes involved in design	Aware of product centred and user centred aspects that makes in the design process.
3	To make the student understand the interesting interaction of various segments of humanities, sciences and engineering in the evolution of a design	To be aware of different stages in design process and results of incorporating other fields with engineering stream
4	To get an exposure as to how to engineer a design.	Understand different stages in manufacturing of a designed product

COURSE OBJECTIVES AND COURSE OUTCOMES FOR EC 100 BASIC ELECTRONICS ENGINEERING

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To get basic idea about types, specification and common values of passive components.	Student can identify the active and passive electronic components.
2	To familiarise the working and	Student can setup simple circuits using

	characteristics of diodes transistors, MOSFET and some measuring instruments.	diodes, transistors and other electronic components.
3	To understand working of diodes in circuits and in rectifiers.	Student will get fundamental idea about basic communication and entertainment electronics.
4	To understand the concept of mobile networks.	Student will get fundamental idea about mobile operation.
5		Student will get fundamental idea about different electronic circuits.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
EEE 100 BASIC ELECTRICAL ENGINEERING**

Sl No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart a basic knowledge in Electrical Engineering with an understanding of fundamental concepts.	Gain preliminary knowledge in basic concepts of Electrical Engineering.
2	To impart the basic knowledge about the Electric and Magnetic circuits.	Discuss the working of various dc and ac machines
3	To inculcate the understanding about the AC fundamentals.	To predict the behavior of any electrical and magnetic circuits.
4	To understand the working of various	To identify the type of electrical machine

	Electrical Machines.	used for that particular application.
5		To wire any circuit depending upon the requirement.
6		Understand working principle of various analogue electrical measuring instruments.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
PH 110 ENGINEERING PHYSICS LAB**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Competency in an engineering or science profession via promotion to positions of increasing responsibility, publications, and/or conference presentations.	An ability to apply knowledge of mathematics, science, and engineering.
2	Adaptability to new developments in science and technology by successfully completing or pursuing graduate education in engineering or related	An ability to design and conduct experiments, as well as to analyze and interpret data.

	fields, or participating in professional development and/or industrial training courses.	
3		An ability to identify, formulate, and solve engineering problems
4		Understanding of professional and ethical responsibility
5		The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
6		A recognition of the need for, and an ability to engage in life-long learning

**COURSE OBJECTIVES AND COURSE OUTCOME FOR
EE 110 ELECTRICAL ENGINEERING WORKSHOP**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	Study and practice on electric circuits	Draw and practice simple house wiring and testing methods
2	To develop skills leading to achievement to connect basic electrical instruments and devices	Develop practical workshop skills in the students.
3	To develop knowledge of electrical wiring and electronic circuits.	Grasp the applications of workshop equipment, wiring accessories etc

4	Various technical facilities used by electricians, wiring regulations, types of cables and electric accessories including switches, lamps, sockets etc.	Physical realization of the range of discrete and integrated semiconductor devices
5		Knowledge of protective devices in electric circuits like fuse, ELCB, MCB etc.

**COURSE OBJECTIVES AND COURSE OUTCOME FOR
EC 110 ELECTRONICS ENGINEERING WORKSHOP**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To give the basic introduction of electronic hardware systems.	Students can identify the active and passive electronic components.
2	To provide hands on training with familiarization, testing, assembling.	Students get hands on assembling, dismantling and repairing systems.

3	To develop knowledge of electrical wiring and electronic circuits.	Drawing of electronic circuit diagrams using BIS/ IEEE symbols.
4	To use the various tools and instruments available in the Electronic Workshop.	Testing of electronic components (Resistor, Capacitor, Diode)
5		Assembling of electronic circuit / system on general purpose PCB.

COURSE OBJECTIVES AND OUTCOME FOR S4

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

MA202 PROBABILITY DISTRIBUTIONS, TRANSFORMS AND NUMERICAL METHODS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:

1	Providing students with a formal treatment of probability theory. Equipping students with essential tools for statistical analyses at the graduate level.	Develop problem-solving techniques needed to accurately calculate probabilities. Apply selected probability distributions to solve problems. Apply problem-solving techniques to solving real-world events.
2	The goal is to provide the basic understanding of the derivation analysis and use of these numerical methods along with the rudimentary understanding of finite precision arithmetic. Apply the appropriate numerical techniques for problems	Be aware of the use of numerical methods in modern scientific computing. Be familiar with finite precision computation. Be familiar with numerical solutions of nonlinear equations in a single variable. Be familiar with numerical interpolation and approximation of functions. Be familiar with numerical integration and differentiation . Be familiar with numerical solution of ordinary differential equations. Be familiar with calculation and interpretation of errors in numerical methods.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CE202 STRUCTRAL ANALYSIS I**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
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		On completion of course the students will be able to:
1	Ability to idealize and analyze statically determinate and indeterminate structures.	An ability to apply knowledge of mathematics, science, and engineering to understand indeterminate structure
2	Ability to analyze cable and arch structures.	Ability to analyze statically determinate trusses, beams, and frames and obtain internal loading
3	Analysis of two pinned arches	Ability to determine deflections of beams and frames using classical methods
4	Apply influence line for indeterminate beams.	Ability to solve statically indeterminate structures using classical methods
5		Familiarity with professional and ethical issues and the importance of lifelong learning in structural engineering
		Familiarity with contemporary issues in structural engineering

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

CE204 CONSTRUCTION TECHNOLOGY

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To study details regarding properties and testing of building materials,.	understand construction materials, their components and manufacturing process
2	To study details regarding the construction of building components	know the properties of concrete and different mix design methods
3	To study properties of concrete and concrete mix design	understand the details regarding the construction of building components
4	To impart the basic concepts in functional requirements of building and building services	analyse and apply learning of materials, structure, servicing and construction of masonry domestic buildings

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

CE206 FLUID MECHANICS II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Application of the Basic principles and laws governing fluid flow to open channel flow including hydraulic jump & gradually varied flow.	The students become capable of analysis of open channel flows & design of open channels. .
2	An understanding of basic modelling laws in fluid mechanics and dimensional analysis	They get an insight into the working of hydraulic machines
3	An ability to apply the fundamental theories of fluid mechanics for the analysis and design of hydraulic machines	They become capable of studying advanced topics such as design of hydraulic structures

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

CE208 GEOTEHNICAL ENGINEERING I

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To explain what Geotechnical Engineering is and how it is important to civil engineering	carry out soil classification
2	To explain how three phase system is used in soil and how are soil properties estimated using three phase system	solve three phase system problems
3	To explain role of water in soil behavior and how soil stresses, permeability and quantity of seepage including flow net are estimated	solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram
4	To determine shear parameters and stress changes in soil due to foundation loads	estimate the stresses under any system of foundation loads
5	To estimate the magnitude and time-rate of settlement due to consolidation	solve practical problems related to consolidation settlement and time rate of settlement
6	To explain what Geotechnical Engineering is and how it is important to civil engineering	carry out soil classification
7	To explain how three phase system is used in soil and how are soil properties estimated using three phase system	solve three phase system problems
8	To explain role of water in soil behavior and how soil stresses, permeability and quantity of seepage including flow net are estimated	solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

HS210/HS200 LIFE SKILLS/BUSINESS ECONOMICS

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To familiarize the prospective	Make investment decisions based on capital
2	engineers with elementary Principles	budgeting methods in alignment with
3	of Economics and Business	micro economic theories.
4	Economics.	
5	To acquaint the students with tools	Make investment decisions based on capital
6	and techniques that are useful in	budgeting methods in alignment with macro
7		
8		

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
CE232 MATERIAL TESTING LAB**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	The objective of the strength of materials lab is to demonstrate the basic principles in the area of strength and mechanics of materials and structural analysis to the undergraduate students through a series of experiments. The experiments are performed to measure the properties of the materials such as impact strength, tensile strength, compressive strength, hardness, ductility etc..	To provide knowledge on mechanical behaviour of materials To acquaint with the experimental methods to determine the mechanical properties of materials.
2	The experiments are performed to measure the properties of the materials such as impact strength, tensile strength, compressive strength, hardness, ductility etc	To acquaint with the experimental methods to determine the mechanical properties of materials.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

CE234 FLUID MECHANICS LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To provide practical knowledge in verification of principles of fluid flow.	To provide the students with a solid foundation in fluid flow principles.
2	To impart knowledge in measuring pressure, discharge and velocity of fluid flow.	To provide the students knowledge in calculating performance analysis in turbines and pumps and can be used in power plants.
3	To understand Major and Minor Losses.	Students can able to understand to analyze practical problems in all power plants and chemical industries.
4	To gain knowledge in performance testing of Hydraulic Turbines and Hydraulic Pumps at constant speed and Head.	Conduct experiments (in teams) in pipe flows and open-channel flows and interpreting data from model studies to prototype cases.
5		Analyze a variety of practical fluid-flow devices and utilize fluid mechanics principles in design.
6		Given the required flow rate and pressure rise, select the proper pump to optimize the pumping efficiency.

COURSE OUTCOME AND OBJECTIVE FOR S6

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.601 DESIGN OF HYDRAULIC STRUCTURES (C)**

SI NO	COURSE OBJECTIVES	SUBJECT LEARNING OUTCOMES OR COURSE OUTCOMES
		ON COMPLETION OF THE COURSE STUDENTS WILL BE THE ABLE TO:
1	To impart knowledge regarding the design of the various minor irrigation structures	Various Stream flow measurements technique
2	To convey the knowledge on the causes of failure, design criteria and stability analysis of different types of dams	Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design
3	To communicate fundamental knowledge on reservoir engineering and river engineering	Basic components of river Training works..
4	To communicate fundamental knowledge on diversion head works and storage head works	Estimate the storage capacity of reservoirs and their useful life.
5		Apply math, science, and technology in the field of water resource Engineering.
6		Know the features of Head works

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.602 DESIGN OF REINFORCED CONCRETE STRUCTURES

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To develop an understanding of and appreciation for basic concepts in the behaviour and design of reinforced concrete systems and elements.	Able to understand the general mechanical behavior of reinforced concrete in accordance with IS 456:2000.
2	II. To give an ability to differentiate between working stress design and limit state design.	2. Able to identify and apply the applicable industry design codes relevant to the design of reinforced concrete members..
3	III. To introduce the basic concepts and steps for reinforced concrete sectional design mainly in accordance with ultimate strength design.	3. Able to analyze and design with detailing of reinforced concrete flexural members.
4	IV. To help the student develop an intuitive feeling about structural and material wise behaviour and design of reinforced concrete systems and elements.	4. Able to analyze and design for shear, torsion and bond for structural members.
5		Ability to design and check for serviceability (crack and deflection) and ultimate limit state conditions.
		6. Able to analyze and design with detailing for vertical and horizontal shear in reinforced concrete.
		7. Able to analyze and design with detailing of reinforced concrete compression members.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.603 ENVIRONMENTAL ENGINEERING II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To learn the basics of sewage composition and its characteristics	determine the sewage characteristics and design various sewage treatment plants
2	To depict the information about various sewage treatment processes	analyze the status of surface water and ground water quality and the remediation technologies
3	To provide the adequate information on various disposal standards for industrial effluents	carry out municipal water and wastewater treatment system design and operation
4	To study the information about air pollution and its effects	manage hazardous wastes, risk assessment and treatment technologies
5	To understand the knowledge about solid waste generation and disposal methods	apply environmental treatment technologies and design processes

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.604 GEOTEHNICAL ENGINEERING II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To emphasize the importance of soil investigations including destructive and nondestructive methods	carry out soil investigation for any civil engineering construction
2	To explain how earth pressure theory is important in retaining structure design	analyse earth retaining structures for any kind of soil medium
3	To explain the concept of bearing capacity and how to estimate the safe bearing capacity for various foundation system including settlement consideration	estimate bearing capacity using Terzhagi's methods
4	To explain in what circumstances pile is needed and how do analysis the pile and pile group under various soil conditions	design proper foundations for any kind of shallow foundation system
5	To study the features of well foundation and machine foundation	estimate pile and pile group capacity for any kind of soil including group efficiency and negative friction
6		Identifying the features of well foundation and machine foundation
7		
8		

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.605 TRANSPORTATION ENGINEERING II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To know about the basics and design of various components of railway engineering	carry out the surveys for railways, airports and harbours
2	To study about the types and functions of track, junctions and railway stations	perform geometric design for the three modes
3	To learn about the aircraft characteristics, planning and components of airport	plan the layout of different types of terminals
4	To study about the types and components of docks and harbours	apply the principles of bus transit, MRTS and LRT
	To know about various urban transportation systems and Intelligent Transportation Systems	demonstrate the fundamentals of Intelligent Transportation Systems
	To know about the basics and design of various components of railway engineering	
	To study about the types and functions of track, junctions and railway stations	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.606 COMPUTER PROGRAMMING AND NUMERICAL METHODS**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To equip students with fundamentals of computer programming	The students will be able to write computer programs for numerical solutions for engineering problems like system of equations and heat equations..
2	To provide fundamental idea about the use of computer programming and numerical methods for analyzing the basic engineering problems.	The students will be able to write computer programs using functions, class and arrays..
3	General Skills (Definition of and calculation of error terms, convergence rate, interpretation of general error properties given the expression for an error. Derivation of pseudo-code for any numerical method.	. Be familiar with finite precision computation,
4	Computer Arithmetic (Floating-point numbers, scientific notation, single precision and double precision IEEE floating-point formats, binary numbers, hexadecimal numbers, conversion between formats, accuracy of floating point representation. Rounding and chopping of numbers, loss of significant figures, noise in evaluating functions, underflow and overflow,	Discussion of the use of numerical methods for real world problems in science, engineering and the humanities.

	summation of numbers, loop errors.)	
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COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.607 TRANSPORTATION ENGINEERING LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To achieve practical experience in testing of pavement materials	Helps to assess the basic engineering properties of pavement materials
2	To get familiar with standard quality lab testing procedures for determining the basic properties and engineering behaviour of soil, aggregates and bitumen	Capable of conducting specific tests required for field application and draw necessary inferences

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.608 CADD LAB

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the students to draft the plan, elevation and sectional views of buildings in accordance with development and control rules satisfying orientation and functional requirements as per National Building Code.	The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, framed buildings using computer softwares.
2	The objectives of this course are to enable the students to understand the general concepts of engineering drawing and general principles on a CAD (particularly AUTOCAD provided by AUTODESK) and extend this knowledge to general use of CADs.	Use the AutoCAD® software program to create drawings from scratch and to modify, manipulate, copy, delete, save, and plot drawings.
3		Use the full range of AutoCAD® commands and options and employ shortcuts and time-saving strategies

Course objective and outcome for s8

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.801 QUANTITY SURVEYING AND VALUATION

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To develop in the student the art and skill whereby a monetary value can be placed on the volume of work previously measured.	1. Understand the fundamentals of quantity survey and valuation, rate analysis
2	To develop an awareness of those factors that affects the cost of construction work.	2. Students can prepare rate analysis.
3	To analyze the influences that effect change in these factors.	3. They can estimate cost of construction site.
4	To encourage the habit of systematically recording all those statistics which are the stock in trade of the good estimator.	4. Calculate the material required for construction site.
5	To produce civil engineering students who have strong foundation in estimation of quantities required for	5. Student will have the confidence to prepare detailed and abstract estimations for roads and building.

	roads and buildings.	
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COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.802 DESIGN & DRAWING OF STEEL STRUCTURES

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Learn the behaviour of structural steel components Ability to perform analysis and design of steel members and connections.	1. Identify and compute the design loads on a typical steel building.
2	Ability to design steel structural systems	2. Identify the different failure modes of steel tension and compression members and beams, and compute their design strengths.
3	learn the behaviour of structural steel components	3. Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria.
4	Familiarity with professional and contemporary issues	4. Identify the different failure modes of bolted and welded connections, and determine their design strengths.

5		5.Ability to analyze and design of tension members, columns, beams and simple bolted and welded connections
		6. Apply relevant Indian Standard provisions to ensure safety and serviceability of structural steel elements.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.803 URBAN PLANNING AND ARCHITECTURE

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course familiarizes the students with planning practice.	1. Understand the basic principles of architectural design and concept of space.
2	To understand the basic principles of architectural design and functional planning of buildings	2. Understand the functional planning of different types of buildings.
3	To develop knowledge in town planning concepts and related principles	3. Understand the various building services to be installed essential while construction of building.
4		4. Develop knowledge in basic concepts of town planning and legal aspects of the same.
5		5. Understand the planning process and various planning standards for different types

		of land use.
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COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.804 CONSTRUCTION MANAGEMENT

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To train the students with the latest and the best in the rapidly changing fields of Construction Engineering, Technology and Management.	1. Apply theoretical and practical aspects of project management techniques to achieve project goals.
2	To prepare the students to be industry leaders who implement the best engineering and management practices and technologies in the construction industry	2. Possess organizational and leadership capabilities for effective management of construction projects
3	To continually work with industry to enhance the program's effectiveness and the opportunities for innovation in the construction industry	3. Be able to apply knowledge and skills of modern construction practices and techniques
4	To conduct research to develop advanced technologies and	4. Have necessary knowledge and skills in accounting, financing, risk analysis and

	management approaches	contracting
5		5. Be capable of using relevant software packages for planning, scheduling, executing and controlling of construction projects.

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.805 ELECTIVE - III

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	The course introduces various concepts of water efficiency and waste minimization in industrial sectors.	This is a specialise course to elucidate latest developments in water and wastewater management practices in diverse pollution sources including industries.
2	Characterization and classification of different types of wastes are discussed along with existing norms for waste disposal.	Selected case studies are chosen to reinforce key concepts and issues.
3	Treatment methods of specific pollutant arising out of industrial process are explained	The course concludes with a brief discussion on pollution issues in small-scale industries and industrial estate planning.
4		
5		

COURSE OBJECTIVES AND COURSE OUTCOMES FOR

13.806 ELECTIVE - IV

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To make the students to gain the knowledge on quality of concrete, durability aspects, causes of deterioration	Students must gained knowledge on quality of concrete, durability aspects
2	To learn various distress and damages to concrete and masonry structures	They will have the knowledge of various distress and damages to concrete and masonry structures
3	To understand the importance of maintenance of structures	Understand the importance of maintenance of structures, types and properties of repair materials
4	To study the various types and properties of repair materials	Assessing damage to structures and various repair techniques
5	To assess the damage to structures using various tests	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR
13.807 PROJECT WORK AND VIVA VOCE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To improve the professional skill and competency of the students	Able to develop a product and present it effectively.
2	To encourage the students to develop an application by themselves	Acquired enough confidence to enter into an industry
3	To understand the real problems in civil engineering construction site and to identify the solution	Improves interpersonal communication skills
2	To assess their overall knowledge about the subjects studied in their curriculam	Able to identify their weaker areas and helps to improve.