

**2012-2013**

**CIVIL ENGINEERING**

**ACADEMIC YEAR 2013-2014**

## ODD SEMESTER

### S1S2 EEE (2012 Batch)- 2008 Scheme

Sl no	Course code	Subject name
1	08.101	Engineering Maths
2	08.102	Engineering Physics
3	08.103	Engineering Chemistry
4	08.104	Engineering Graphics
5	08.105	Engineering Mechanics
6	08.106	Basic Civil Engineering
7	08.107	Basic Mechanical Engineering
8	08.108	Basic Electrical and Electronics Engineering
9	08.109	Basic Communication and Information Engineering
10	08.110	Engineering Workshop

### S3 CE (2011 batch)

Sl no	Course code	Subject name
1	08.301	Engineering Mathematics II
2	08.302	Mechanics of Structures
3	08.303	Fluid Mechanics I
4	08.304	Concrete Technology
5	08.305	Surveying I
6	08.306	Engineering Geology
7	08.307	Building Technology and drawing
8	08.308	Practical surveying I
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**S5 CE (2010Batch)**

Sl no	Course code	Subject name
1	08.501	ENGINEERING MATHEMATICSIV
2	08.502	DESIGN OF REINFORCED CONCRETE STRUCTURES I
3	08.503	STRUCTURAL ANALYSIS II
4	08.504	TRANSPORTATION ENGINEERING I
5	08.505	URBAN PLANNING AND ARCHITECTURE
6	08.506	ELECTIVE I
7	08.507	PRACTICAL SURVEYING II
8	08.508	CT LAB

**S7 CE(2009 Batch)**

Sl no	Course code	Subject name
1	08.701	Advanced structural analysis
2	08.702	Design of Hydraulic Structures
3	08.703	Geotechnical engineering II
4	08.704	Environmental engineering I
5	08.705	Elective III (Air Quality Management)
6	08.706	Environmental engineering lab
7	08.707	Geotechnical engineering lab

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.101: ENGINEERING MATHEMATICS I COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	This course provides students an insight into the various applications of differentiation, partial	At the end of the course, the students will be familiar with various concepts of calculus which are essential for engineering.

	<b>differentiation techniques</b>	
<b>2</b>	<b>The methods for solving differential equations and the concept of linear algebra are also introduced as a part of this course.</b>	<b>They'll also become acquainted with the basic ideas of Laplace transforms and linear algebra</b>
<b>3</b>	<b>This course provides students an insight into the various applications of multiple integrals</b>	
<b>4</b>	<b>This course provides students an insight into the various applications of Laplace transforms.</b>	

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.102: ENGINEERING PHYSICS COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>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.</b>	<b>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.</b>
<b>2</b>	<b>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</b>	<b>Define and explain the propagation of light in conducting and non-conducting media.</b>

	photonics problems.	
3	This course equip the students to assimilate engineering and technology through the exposure of fundamentals of Physics	Define and explain the physics governing laser behaviour and light matter interaction and 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  
08.103: ENGINEERING CHEMISTRY COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To impart sound knowledge in the different fields of theoretical chemistry so as to apply it to the problems in engineering field.	The confidence level of students will be improved to tackle problems in engineering field related to chemical aspects.
2	To develop analytical capabilities of students so that they can characterize, transform and use materials in engineering and apply	The students gain capability in fabricating novel materials with properties that find various engineering applications

	knowledge gained in solving related engineering problems.	
3	To acquire knowledge about desalination of brackish water and treatment of municipal water.	The students will be equipped to take up chemistry related topics as part of their project works during higher semesters of the course.
4	To gain the knowledge of conducting polymers, bio-degradable polymers and fibre reinforced plastics.	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
5	To understand mechanism of corrosion and preventive methods.	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution. Design economically and new methods of synthesis nano materials.
6	To have an idea and knowledge about the Chemistry of Fuels.	Have the knowledge of converting solar energy into most needy electrical.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.104: ENGINEERING GRAPHICS COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Enable the students to effectively communicate graphic representation as per standards	Able to prepare the orthographic projections of points and straight lines placed in various quadrants
2	To develop imagination skill in students and represent them effectively in a paper	Demonstrate the ability to draw orthographic projections of various solids.

3	Learn to sketch and take field dimensions.	Ability to draw and interpret the sectioned views of solids
4	Learn to take data and transform it into graphic drawings.	Ability to draw the developments of various solids
5		Will be confident in preparing the isometric and perspective views of various solids.
6		Ability to draw the projections of intersection of solids and perform free hand sketching.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.105: ENGINEERING MECHANICS COURSE**

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.

<b>5</b>		<b>Students would be able to apply fundamental concepts of dynamics to practical problems.</b>
<b>6</b>		<b>Understand the basic elements of vibration.</b>

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.106: BASIC CIVIL ENGINEERING COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>This course imparts to the students, the fundamentals of civil engineering and creates awareness on various issues related to our living environment and their remedies</b>	<b>At the end of the course, the students will be familiar with the different stages of building construction, various materials used for construction and environmental issues</b>
<b>2</b>	<b>To inculcate the essentials of civil engineering field to the students of all branches</b>	<b>The students will be able to illustrate the fundamental aspects of civil engineering</b>
<b>3</b>	<b>To provide the students an illustration of the significance of the civil engineering profession satisfying societal needs.</b>	<b>The students should able to plan a building</b>
<b>4</b>	<b>To inculcate the essentials of civil engineering field to the students of all branches</b>	<b>Students will be able to explain about surveying for making horizontal and vertical measurements.</b>
<b>5</b>	<b>.</b>	<b>They will able to illustrate the uses of various building materials and construction of different components of a building.</b>



<b>6</b>		<b>The students will be able to illustrate the fundamental aspects of civil engineering</b>
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.107: BASIC MECHANICAL ENGINEERING COURSE**

<b>Sl. No.</b>	<b>Course Objectives</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
		<b>On completion of course the students will be able to:</b>
<b>1</b>	<b>To expose the students to the thrust areas in Mechanical Engineering and their relevance by covering the fundamental concepts</b>	<b>The student will be able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products, processes and systems.</b>
<b>2</b>	<b>This subject covers wide areas of Mechanical Engineering and is intended for exposing the students to the various theoretical and practical aspects of thermal engineering, fluid mechanics and machines, manufacturing and power transmission.</b>	<b>The student can able to understand the inter dependence of the thrust areas in Mechanical Engineering and their significance leading to the development of products and systems.</b>
<b>3</b>		<b>The students can able to understand working of automobiles.</b>
<b>4</b>		<b>Able to understand about various mechanical processes.</b>
<b>5</b>		
<b>6</b>		

**COURSE OBJECTIVES AND COURSE OUTCOME FOR  
08.108 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**

Sl. No.	Course Objectives	Course Outcomes
		On completion of course the students will be able to:
1	To understand the basic concepts of magnetic, AC & DC circuits	Students will be able to apply the knowledge of mathematics, science, engineering fundamentals and Electrical and Electronics Engineering for solving complex engineering problems.
2	To impart knowledge on rms, average values of ac waveforms.	Troubleshoot problems of various electric circuits.
3	To impart knowledge on constructional details, principle of operation of ELCB, MCB etc.	Enable to identify the working of various equipments of electronics.
4	To gain knowledge about the fundamentals of wiring and earthing	Perform the analysis and types of earthing.
5		To impart knowledge related to renewable energy sources and energy conservation issues, point towards sustainable development, though the Electrical engineering discipline.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.109: BASIC COMMUNICATION AND INFORMATION ENGINEERING COURSE**

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 characteristics of diodes transistors, MOSFET and some measuring instruments.	Student can setup simple circuits using diodes, transistors and other electronic components.
	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	To get basic idea about types, specification and common values of passive components.	Student will get fundamental idea about different electronic circuits.
6		Student can identify the active and passive electronic components.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR S1 S2**

**08.110: ENGINEERING WORKSHOP COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	The Engineering Workshop Practice for engineers is a training lab course spread over entire semester.	Student will be able to make various joints in the given object with the available work material.
2	The modules include training on different trades like Fitting, Carpentry, etc... which makes the students to learn how various joints are made using wood and other metal pieces.	Student will be able to know how much time a joint will take for the assessment of time
3	Familiarization of basic manufacturing hand tools and equipment like files, hacksaw, spanner chisel hammers, etc.	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
4	Familiarization of various measuring devises like vernier height gauge, vernier caliper, micrometer, steel rule etc.	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
5		Able to choose different measuring devises according to the work.
6		Skill achieved to construct models by using basic mechanical workshop sections like

		welding, moulding, smithy, carpentry etc.
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### COURSE OUTCOME AND OBJECTIVES FOR S3

#### ENGINEERING MATHEMATICS II

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. Learn to work with multivariable functions. Learn to work with vector functions.	Apply mathematics at this level to the real world, especially in the areas of physics and geometry. Find areas of plane regions, surface areas, and arc lengths
2	Mathematics fundamental necessary to formulate, solve and analyze engineering problems	Determine whether solutions of such an equation are linearly independent.
3	An understanding of Fourier Series and fourier Transform to solve real world problem	Use the methods of undetermined coefficients
4	Identify an partial differential equation and its order	How to transform a PDE of first order in canonical form.
5	Solve first order linear differential equations and seperable differential equation	How to solve PDE of first order using the method separation of variables
	To study the application of transform techniques to solve linear ordinary and partial differential equations and to solve boundary value problems by using Fourier series	Understand the basics of transformation techniques.
		Apply the transform techniques for solving ordinary differential equations and partial

		differential equations
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**08.301 MECHANICS OF STRUCTURES**

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

	Ability to determine the deformation due to different condition like loading temperatue etc	
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08303 FLUID MECHANICSI**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the basic properties of the fluid, fluid statics, kinematics, and fluid dynamics so as to	. Students will be able to get a basic knowledge of fluids in static, kinematic and dynamic equilibrium,
2	analyse and appreciate the complexities involved in solving the fluid flow problems.	so as to solve real life problems in fluid mechanics.
3	To develop the skill for applying the fluid statics, kinematics and dynamics of fluid flow concepts for solving civil engineering problems.	
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.304 CONCRETE TECHNOLOGY**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Understand properties of concrete and types of concrete	To understand the behaviour of fresh and hardened concrete.
2	Know the procedure to determine the properties of fresh and hardened of concrete	To make aware the recent developments in concrete technology
3	Understand properties of cement and aggregate and types of cement	To understand factors affecting the strength, workability and durability of concrete
4	Gain ideas on non-destructive testing of concrete	To impart the methods of proportioning of concrete mixtures
5	Gives ideas on the construction and inspection requirements the buildings	To make aware about new construction equipments



**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.305 SURVEYING I**

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

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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.306 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 Engineering like Soil Mechanics, Rock Mechanics, Water Resources Engg, Environmental Engg, and Earthquake Engineering.	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.
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3		
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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.307. BUILDINGTECHNOLOGY AND DRAWING**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Understand properties of concrete and types of concrete	To understand the behaviour of fresh and hardened concrete.
2	Know the procedure to determine the properties of fresh and hardened of concrete	To make aware the recent developments in concrete technology
3	Understand properties of cement and aggregate and types of cement	To understand factors affecting the strength, workability and durability of concrete
4	Gain ideas on non-destructive testing of concrete	To impart the methods of proportioning of concrete mixtures
5	Gives ideas on the construction and inspection requirements the buildings	To make aware about new construction equipments

## COURSE OBJECTIVES AND COURSE OUTCOMES FOR

### 08.308 PRACTICAL SURVEYING

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 OBJECTIVES AND OUTCOMES FOR S5**

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**08.501ENGINEERING MATHEMATICS IV**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Understand how complex numbers provide a satisfying extension of the real numbers;	Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers. Write complex numbers in polar form. . Compute exponentials and integral powers
2	Perform algebra with complex numbers.Compute complex line integ	Explain the fundamental concepts of complex analysis and their role in modern mathematics and applied contexts

3	Model decision making problems using major modeling formalisms of artificial intelligence and operations research, including propositional logic, constraints, linear programs and Markov processes,	Formulate simple reasoning, learning and optimization problems, in terms of the representations and methods presented (homework, quiz).
4	To provide adequate knowledge about the water treatment processes and its design	. Demonstrate ability to solve systems of linear equations.
5		3. Demonstrate ability to work within vector spaces and to distill vector space properties

### **COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

#### **08.502 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  
08.503 STRUCTURAL ANALYSIS 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	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.

### **COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

#### **08.504 TRANSPORTATION ENGINEERING I**

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		<b>On completion of course the students will be able to:</b>



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**

### **08.505 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	2. Understand the functional planning of

	planning of buildings	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.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**08.506. ELECTIVE I**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	Understand properties of concrete and types of concrete	To understand the behaviour of fresh and hardened concrete.
2	Know the procedure to determine the properties of fresh and hardened of concrete	To make aware the recent developments in concrete technology
3	Understand properties of cement and aggregate and types of cement	To understand factors affecting the strength, workability and durability of concrete
4	Gain ideas on non-destructive testing of concrete	To impart the methods of proportioning of concrete mixtures
5	Gives ideas on the construction and inspection requirements the buildings	To make aware about new construction equipments

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.507 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	
5		
6		

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.508 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 OUTCOMES FOR S7**  
**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**  
**08.701 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	2. Ability to analyze statically determinate trusses, beams, and frames and obtain internal loading

	analysis of rigid frames and trusses.	
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  
08.702 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
<b>3</b>	To communicate fundamental knowledge on reservoir engineering and river engineering	Basic components of river Training works..
<b>4</b>	To communicate fundamental knowledge on diversion head works and storage head works	Estimate the storage capacity of reservoirs and their useful life.
<b>5</b>		Apply math, science, and technology in the field of water resource Engineering.
<b>6</b>		Know the features of Head works

## **COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

### **08.703 GEOTECHNICAL 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	estimate bearing capacity using Terzhagi's methods

	system including settlement consideration	
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**

### **08.704ENVIRONMENTAL 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**

### **08.705ELECTIVE – III(AIR QUALITY MANAGEMENT)**

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**

### **08.706 ENVIRONMENTAL ENGINEERING LAB**

Sl. No.	Course Objectives	Subject Learning Outcomes or 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	Identify the importance of drinking water

	standards and its specified limits	standards and their permissible limits
3	To get the practical experience in analysis of water samples	
4		
5		

### COURSE OBJECTIVES AND COURSE OUTCOMES FOR

#### 08.707 GEOTECHNICAL ENGINEERING LAB

SI No	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To estimate the index properties of both coarse and fine soil	On Completion of course students will be able to classify soil by physical observation of the soils
2	To estimate consistency limit of given soil.	Students will be able to classify soil based on estimated index and engineering characteristics of soils
3	To estimate shear strength of soils by direct shear test, triaxial shear test, vane shear test & unconfined	Students will be able to carry out interpolation among the estimated soil design parameters

	compressive test	
4		

**EVEN SEMESTER**

**S4CE (2011 BATCH)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
<b>1</b>	<b>08.401</b>	<b>Engineering Mathematics II</b>	<b>Prabhiya</b>
<b>2</b>	<b>08.402</b>	<b>Buisnees economics</b>	<b>Rajan sir</b>
<b>3</b>	<b>08.403</b>	<b>Structural analysis</b>	<b>Priya</b>
<b>4</b>	<b>08.404</b>	<b>fluidmechanics</b>	<b>Saranya</b>
<b>5</b>	<b>08.405</b>	<b>Surveying II</b>	<b>Sheena</b>
<b>6</b>	<b>08.406</b>	<b>Building planning and drawing</b>	<b>Suji</b>
<b>7</b>	<b>08.407</b>	<b>Sm lab</b>	<b>Suji</b>
<b>8</b>	<b>08.408</b>	<b>Fm lab</b>	<b>Krishna das</b>
<b>9</b>			

**S6 CE (2010 BATCH)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
<b>1</b>	<b>08.601</b>	<b>DESIGN OF STEEL STRUCTURES</b>	<b>Suji</b>
<b>2</b>	<b>08.602</b>	<b>GEOTECHNICAL ENGINEERING I</b>	<b>Ammu</b>
<b>3</b>	<b>08.603</b>	<b>WATER RESOURCES ENGINEERING</b>	<b>Archa gopan</b>
<b>4</b>	<b>08.604</b>	<b>TRANSPORTATION ENGINNEERING II</b>	<b>PRADEEP</b>

5	08.605	PROGRAMMING AND NUMERICAL METHODS	AMITHA
6	08.606	ELECTIVE II	Chithira
7	08.607	TRANSPORTATION ENGINEERING LAB	SHEENA
8	08.608	CADD LAB	Archa
9			

**S8 CE (2009 BATCH)**

Sl no	Course code	Subject name	Staff handled
1	08.801	Design & Drawing of RC Structures	Shabna
2	08.802	Design & Drawing of Steel Structures	Chithira
3	08.803	Environmental Engineering II	Asha raj
4	08.804	Quantity Surveying & Valuation	SHEENA
5	08.805	Construction Management	Archa gopan
6	08.806	Ground Improvement	Bobeena
7	08.807	Industrial Waste Water Management	Pradeep
8			
9			

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR**

**08.401: ENGINEERING MATHEMATICS III COURSE**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To introduce the basic notion in complex analysis such as Analytic Functions, Harmonic functions and their applications in fluid mechanics and differentiations and integration of complex functions, transformations and their	After successful completion of this course, the students will be able to use numerical methods to solve problems related to engineering fields.

	applications in engineering fields.	
2	Numerical techniques for solving differential equations are also introduced as a part of this course.	This course helps students to master the basic concepts of complex analysis which they can use later in their career.

#### 08.402 BUSINESS ECONOMICS COURSE

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 engineers with elementary Principles of Economics and Business Economics.	Make investment decisions based on capital budgeting methods in alignment with micro economic theories.
2	To acquaint the students with tools and techniques that are useful in their profession in Business Decision Making which will enhance their employability;	Make investment decisions based on capital budgeting methods in alignment with macro economic theories.
3	To apply business analysis to the “firm” under different market conditions.	Analyse the profitability of the firm, economy of operation.
4	To apply economic models to examine current economic scenario and evaluate policy options for addressing economic issues.	Determination of price under various market situations with good grasp on the effect of trade cycles in business.
5		Gain knowledge of elementary accounting concepts used for preparing balance sheet

		and interpretation of balance sheet.
6		

## COURSE OBJECTIVES AND COURSE OUTCOMES FOR

### STRUCTURAL ANALYSIS I

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		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 determinate and indeterminate beams.	Ability to solve statically indeterminate structures using classical methods
5	Analysis of beam , frames and truss using consistent deformation method	Familiarity with professional and ethical issues and the importance of lifelong learning in structural engineering
		Familiarity with contemporary issues in structural engineering

		Ability to obtain the influence lines for statically determinate and indeterminate structures and the ability to identify, formulate and solve structural analysis problems involving moving loads.

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
08.404. FLUID MECHANICS II**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the basic properties of the fluid, fluid statics, kinematics, and fluid dynamics so as to	. Students will be able to get a basic knowledge of fluids in static, kinematic and dynamic equilibrium,
2	analyse and appreciate the complexities involved in solving the fluid flow problems.	so as to solve real life problems in fluid mechanics.
3	To develop the skill for applying the fluid statics, kinematics and dynamics of fluid flow concepts for solving civil engineering problems.	
4		



## COURSE OBJECTIVES AND COURSE OUTCOMES FOR

### SURVEYING II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		On completion of course the students will be able to:
1	To understand the basics and elements of different types of curves on roads and their preliminary survey	set out curves, buildings, culverts and tunnels
2	To learn about surveying applications in setting out of curves, buildings, culverts and tunnels	carry out a geodetic survey, taking accurate measurements using instruments and adjusting the traverse
3	To get introduced to different geodetic methods of survey such as triangulation, trigonometric leveling	apply mathematical adjustment of accidental errors involved in surveying measurements
4	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
5	To get introduced to modern advanced surveying techniques involved such as Remote sensing, Total station, GPS, Photogrammetry etc.	invoke advanced surveying techniques over conventional methods in the field of civil engineering

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**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
BUILDING PLANNING AND DRAWING (C)**

SI NO	COURSE OBJECTIVES	SUBJECT LEARNING OUTCOMES OR COURSE OUTCOMES
		ON COMPLETION OF THE COURSE STUDENTS WILL BE THE ABLE TO:
1	To understand the principles of planning and bylaws	apply the principles of planning and bylaws used for building planning
2	To draw plan, elevation and section of residential building	draw plan, elevation and section for various structures
3	To draw plan, elevation and section of public and industrial structures	
4	To give a brief idea about CRZ	
5		
6		

**COURSE OBJECTIVES AND COURSE OUTCOMES FOR  
STRENGTH OF MATERIAL 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  
FLUID MECHANICS LAB**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		<b>On completion of course the students will be able to:</b>
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 OBJECTIVES AND COURSE OUTCOMES FOR S6**

### **08.601 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.

### **08.602 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 including flow net are estimated	solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram

### 08.603 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
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### 08.604 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	<b>demonstrate the</b> 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	



### 08.605 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	. Be familiar with finite precision computation,

	any numerical method.	
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, summation of numbers, loop errors.)	Discussion of the use of numerical methods for real world problems in science, engineering and the humanities.

#### 08.606 ELECTIVE II

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		<b>On completion of course the students will be able to:</b>
1	Understanding of problems of municipal waste, biomedical waste, hazardous waste, ewaste, industrial waste etc.	To be able to understand the implications of the production, resource management and environmental impact of solid waste management.
2	Knowledge of legal, institutional and financial aspects of management of solid wastes.	To be able to understand components of solid waste management infrastructure systems to minimize the above effects.
3	Become aware of Environment and health impacts solid waste mismanagement	To be aware of the significance of recycling, reuse and reclamation of solid wastes.
4	Understand engineering, financial and	To be familiar with relationships between

	technical options for waste management	inappropriate waste management practices and impacts on water, soil and sediment quality.
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**08.607 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

**08.608 CADD LAB**

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 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 OBJECTIVES AND COURSE OUTCOMES FOR S8**

### **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.

### **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.

### 08.603 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

### **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	2. Students can prepare rate analysis.



	construction work.	
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 roads and buildings.	5. Student will have the confidence to prepare detailed and abstract estimations for roads and building.

### **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 management approaches	4. Have necessary knowledge and skills in accounting, financing, risk analysis and contracting
5		5. Be capable of using relevant software packages for planning, scheduling, executing and controlling of construction projects

**ELECTIVE – II(GROUND IMPROVEMENT)**

Sl. No.	Course Objectives	Subject Learning Outcomes or Course Outcomes
		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

### **INDUSTRIAL WASTE WATER MANAGEMENT**

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.
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