

**Jagadambha College of Engineering and Technology Yavatmal**  
**Department of Civil Engineering(UG)**

Year: Second Year	Semester: Third
<b>Course Name: Mathematics III</b>	<b>Course Code: CO23CE01</b>
<b>CO23CE01.1</b>	Demonstrate the knowledge of differential equations to solve engineering problems of analog systems.
<b>CO23CE01.2</b>	Apply Laplace transform to solve differential equations.
<b>CO23CE01.3</b>	Identify and solve certain forms of partial difference equations as applied to discrete systems.
<b>CO23CE01.4</b>	Apply numerical methods to obtain approximate solutions to mathematical problems.
<b>CO23CE01.5</b>	Comprehend knowledge of complex analysis in terms of complex variables, harmonic functions and conformal mapping.
<b>CO23CE01.6</b>	Apply the ideas of probability & statistics, including counting techniques, random variables and distribution to examine elementary parametric and non-parametric statistical test.

<b>Course Name: Strength of Material</b>	<b>Course Code: CO23CE02</b>
<b>CO23CE02.1</b>	To learn the mechanical properties, stress strain relation, find out the elongation, stress of Biaxial & triaxial loading for varying section, Hooks law, and uniaxial stresses strains for compound bar in uniaxial tension & compression, also includes temperature stresses of compound bar.
<b>CO23CE02.2</b>	To learn the how to draw the Shear Force Diagram (SFD) & Bending Moment Diagram (BMD) for a different types of loading.
<b>CO23CE02.3</b>	In this unit students will focus on the Stresses in Beam, section modulus for solid & hollow section, Shear stress distribution diagram, and strain energy developed in the structure while the construction process
<b>CO23CE02.4</b>	In this unit students are able to learn the torsion effect on structure in which condition it is developed, and thin cylinder subjected to internal pressure
<b>CO23CE02.5</b>	This part deals with the Principal plane & principal stress, Mohr's circle of stress, and the combined & direct stresses for long column, short column & retaining wall with a horizontal lateral forces
<b>CO23CE02.6</b>	To learn the methods of slope & deflection for determinate beam subjected to point load, uniformly distributed load, and theory of long column & Euler's, Rankine formula.

<b>Course Name: Transportation Engineering- I</b>	<b>Course Code: CO23CE03</b>
<b>CO23CE03.1</b>	To develop transportation engineering principles of transportation engineering, materials used for the construction of highways and its standard procedure for the same
<b>CO23CE03.2</b>	To learn on design elements of highway, its standard related geometric design of various elements of highway such as Pavements, curves, widening, super elevation.
<b>CO23CE03.3</b>	To understand the Flexible and Rigid pavement the various theories considered for the designing of an ideal highway system, also the standard actual construction process and the maintenance of the same.
<b>CO23CE03.4</b>	To learn the Road traffic handling elements such as parking system, signals, roadway markings, signs, intersections and the ACT related to traffic.
<b>CO23CE03.5</b>	To understand Bridges, types of bridges, its components parts, and the environmental aspects and topographical study required for the construction of bridge.
<b>CO23CE03.6</b>	To learn elements related to the bridge which includes flood discharge analysis, scour depth, loadings & Stresses on bridges, its repair maintenance.

<b>Course Name: Building Construction &amp; Material</b>	<b>Course Code: CO23CE04</b>
<b>CO23CE04.1</b>	To understand the importance of different types of Buildings and type of structure, foundation, types of foundation and bearing capacity of soil.
<b>CO23CE04.2</b>	Students will gain the knowledge of Stone masonry, Brick Masonry, and earthquake forces.
<b>CO23CE04.3</b>	To understand what different types of Floors, Roofs, is Roof covering, formwork and their suitability.
<b>CO23CE04.4</b>	To understand the different types of doors windows and ventilation and their suitability.
<b>CO23CE04.5</b>	To gain the information and knowledge about stair case and other vertical communication. Also students can apply the know of painting, pointing etc.
<b>CO23CE04.6</b>	To understand the special aspects of construction like Damp proofing, fire proofing, sound proofing etc.

<b>Course Name: Engineering Geology</b>	<b>Course Code: CO23CE05</b>
<b>CO23CE05.1</b>	To understand the different branches of geology and importance in civil engineering field. To understand mineralogy and physical properties of minerals.
<b>CO23CE05.2</b>	To understand structural geology. To understand what is Folds, Faults, Unconformity and earthquake.
<b>CO23CE05.3</b>	To understand the geological investigation of dams and reservoirs

Year: Second Year	Semester: Fourth
<b>Course Name: Geotechnical Engineering I</b>	<b>Course Code: CO24CE01</b>
<b>CO24CE01.1</b>	To get knowledge of soil structure with its formation and various properties on which the soil can be classified as per Indian Standard
<b>CO24CE01.2</b>	To understand Clay minerals and concept of Compaction which refers to computation of dry and wet densities of soil with optimum moisture content and thus Quality control
<b>CO24CE01.3</b>	To understand the concept of Permeability for stratified soil deposits and various methods for drainage and dewatering of soil
<b>CO24CE01.4</b>	Students will able to understand that how to estimate the seepage velocity and pressure through soil and requirement of ideal filter materials towards seepage
<b>CO24CE01.5</b>	To understand the Vertical stress distribution in soil mass and its computation by various methods and also the Effect of Consolidation on soil mass.
<b>CO24CE01.6</b>	Students will able to understand that how to estimate the shear strength of soil by various Laboratories shears strength tests and also parameters by using Mohr's stress failure criterions.

<b>Course Name: Fluid Mechanics I</b>	<b>Course Code: CO24CE02</b>
<b>CO24CE02.1</b>	To understand the different properties of fluid and their application to solving the problems of hydraulics.
<b>CO24CE02.2</b>	To identify the forces on immersed bodies and study of kinematics and types of water flow
<b>CO24CE02.3</b>	To understand the fluid dynamics and different types of forces acting on the pipe while pipe is bend.
<b>CO24CE02.4</b>	To study the different types of discharge measuring devices .to measure the discharge of pipe as well as open channel and their practical application.
<b>CO24CE02.5</b>	To understand the types of flow in a circular pipes.
<b>CO24CE02.6</b>	To understand the different minor and major losses of in pipe network and flows around immersed bodies

<b>Course Name: Theory of Structure I</b>	<b>Course Code: CO24CE03</b>
<b>CO24CE03.1</b>	To understand Concept of statically indeterminate and determinate beam and frame. Also able to Analysis of beam by theorem of three moments.
<b>CO24CE03.2</b>	To determine slope and deflection in determinate beams and portals. Deflection in determinate trusses by understanding the Castiglione's theorem I & Unit load method.
<b>CO24CE03.3</b>	To understand the concept of Influence line diagrams for Reactions, Bending moment and Shear force for determinate beams.
<b>CO24CE03.4</b>	To learn to draw Influence line diagrams for forces in members of simple trusses. Also able to analyse of three hinged arches subjected to static loads.
<b>CO24CE03.5</b>	Student will be able to analyse of continuous beams with and without sinking of Support & portal frames without side sway by using Slope deflection method.
<b>CO24CE03.6</b>	Student will be able to analyse continuous beams with and without sinking of Support & portal frames without side sway by using Moment Distribution method.

<b>Course Name: Surveying- I</b>	<b>Course Code: CO24CE04</b>
<b>CO24CE04.1</b>	To Understand surveying, principles of survey engineering, basic instruments used for the of engineering works like tape, chain, prismatic compass, level, theodolite etc. and its standard procedure for the same.
<b>CO24CE04.2</b>	In the particular topics students will focus on how to plot the particular object on drawing sheet by using chain and prismatic compass, how to minimize the errors while plotting the object and this error is eliminated by using Bowditch Graphical method.
<b>CO24CE04.3</b>	To Learn to plot the particular object on drawing sheet by using chain and prismatic compass, also minimize the errors while plotting the object and this error is eliminated by using Bowditch Graphical method.
<b>CO24CE04.4</b>	In these particular units students will focus on how to plot the particular object on drawing sheet by using the theodolite instrument, also deals with different methods of theodolite traversing.
<b>CO24CE04.5</b>	This part deals with the methods of leveling, how to find out the Reduced level by HI method & Rise & Fall method. Study of contour for a topographical study required for the construction of site.
<b>CO24CE04.6</b>	In this unit student will able to learn the various elements related to the plane table surveying which includes methods of plane table, advantage, disadvantage & study of Minor instruments.

<b>Course Name: Reinforcement Cement Concrete -I</b>	<b>Course Code: CO24CE05</b>
<b>CO24CE05.1</b>	Students will get knowledge about Physical properties & laboratory test of cement, aggregate & properties of fresh concrete with manufacturing process of concrete.
<b>CO24CE05.2</b>	Students will get knowledge about properties of harden concrete & admixtures.
<b>CO24CE05.3</b>	Students will get knowledge about special concrete & special concreting techniques.
<b>CO24CE05.4</b>	Students will able to understand about mix design of concrete & different methods of mix design
<b>CO24CE05.5</b>	Students will able to understand basic elastic theory with different analysis methods, type of reinforcement, analyse& design of singly reinforced beam & one way slab by working stress method.
<b>CO24CE05.6</b>	Students will able to analyse& design of doubly reinforced rectangular beam and understand shear stress in reinforced concrete beam section, shear reinforcement, bond stress.

Year: Third Year	Semester: Fifth
<b>Course Name: Reinforcement Cement Concrete -II</b>	<b>Course Code: CO35CE01</b>
CO35CE01.1	Analyze & design of Circular & Rectangular tank with rigid and flexible base resting on firm ground by working stress method.
CO35CE01.2	Analyze & design of one way single span & continuous span.
CO35CE01.3	Analyze & design of two way solid slab, Dog legged staircase
CO35CE01.4	Analyze & design of rectangular & flange section of beam.
CO35CE01.5	Analyze & design of columns & isolated footing.
CO35CE01.6	Analyze & design of grid slab & detailing of earthquake resistant construction.

<b>Course Name: Fluid Mechanics -II</b>	<b>Course Code: CO35CE02</b>
CO35CE02.1	To understand the turbulent flows through pipe and their practical application.
CO35CE02.2	To study the different types of flows in open channel and also to study the different types of surface profile
CO35CE02.3	To understand the Gradually varied flow, Hydraulic jump in horizontal rectangular channel.
CO35CE02.4	To understand the Dimensional Analysis .and study of model analysis for study of their prototype.
CO35CE02.5	To study the different types of of turbines and their working to calculating the efficiency of the particular turbine.
CO35CE02.6	To understand the different types of pump and their working to calculating there efficiency and also the study of hydraulic ram.

<b>Course Name: Building Planning &amp; CAD</b>	<b>Course Code: CO35CE03</b>
CO35CE03.1	Make use of principles of planning and principles of architectural Planning
CO35CE03.2	Draw line diagram, plan, elevation and sections & create a sustainable structure
CO35CE03.3	Make use of principles of planning and principles of architectural Planning
CO35CE03.4	Hand drafting any parts of a building.
CO35CE03.5	Plan effectively various types of buildings according to their utility with reference to different codes

<b>Course Name: Surveying - II</b>	<b>Course Code: CO35CE04</b>
CO35CE04.1	To understand the Tachometry: Stadia methods, fixed hair and movable hair and tangential method, formulae for distance and reduce level determination. Theory of analytic lens, Beaman's stadia arc, Auto reduction tachometer such as Jeffcott Hammer fennel

<b>CO35CE04.2</b>	To study the Classification, degree of curve, elements of circular and compound curves, theory and methods of setting out simple curves, Instrumental method of setting out compound curves, Transition curves. Ideal transition curves, characteristics methods of determination of length, Elements of different types and methods of setting out
<b>CO35CE04.3</b>	To understand the Triangulation : principles, classification of triangulation system, triangulation figures, their choice of station, phase of signals, towers, satellite station, reduction to centre, fieldwork, Reconnaissance.
<b>CO35CE04.4</b>	To study the Hydrographic surveying: necessity, controls, shore line surveys, gauges, sounding equipment's and procedure of taking soundings, methods of location of sounding, three point problem in hydro graphic surveying, analytical and graphical methods. surface alignment, correlation of surface and underground surveys; Weisbach
<b>CO35CE04.5</b>	To study the Elements of photo geometry Basic definitions, terrestrial and aerial photography, scale of vertical photograph, Relief and relief displacements, heights from parallel measurements, flight planning, photographs required, Remote sensing remote sensing systems, advantages over conventional system, energy interaction in the
<b>CO35CE04.6</b>	To understand the Field Astronomy Elements of spherical trigonometry, Napier's rules of circular parts, celestial sphere, ecliptic, circumpolar stars, astronomical terms, Astronomical triangle, coordinate systems, GIS & GPS.

<b>Course Name: Production Management</b>	<b>Course Code: CO35CE05</b>
<b>CO35CE05.1</b>	To understand the flexible manufacturing system, computer integrated manufacturing and design of service processes and tools for product development.
<b>CO35CE05.2</b>	To understands the Forecasting & Facility location payout.
<b>CO35CE05.3</b>	To understands effective job design, production and operation standards.
<b>CO35CE05.4</b>	To understands the aggregate planning for service organizations.
<b>CO35CE05.5</b>	To evaluates the inventory control.
<b>CO35CE05.6</b>	To understand the total quality management.

<b>Course Name: Communication Skill</b>	<b>Course Code: CO35CE06</b>
<b>CO35CE06.1</b>	To understand the comprehension over an unseen passage with the study of different functions of words as well as structure of grammatical sentences
<b>CO35CE06.2</b>	To understand basics of communication and their Principles
<b>CO35CE06.3</b>	To understand specific formats for written communication for official uses and other uses of Non- verbal communications

Year: Third Year	Semester: Sixth
<b>Course Name: NUMERICAL METHODS &amp; COMPUTER PROGRAMMING</b>	<b>Course Code: CO36CE01</b>
CO36CE01.1	Introduction to FORTRAN programming language. Understand the way of writing code for input output. Understand file input output
CO36CE01.2	Students understand flow control in program and memory allocation
CO36CE01.3	Understand use of subprograms to prepare individual small program used reputedly. Understand use of command to share same memory in different subprogram
CO36CE01.4	Understand application of language to solve various matrix operations. Programming to solve different equations
CO36CE01.5	Application of FORTRAN programming language to solve quadratic equation. Numerical integration and finding roots of equation
CO36CE01.6	Application of programming language to solve various civil engineering problem

<b>Course Name: Structural Design -I</b>	<b>Course Code: CO36CE02</b>
CO36CE02.1	Ability to analyze and design of tension members, columns, beams, beam-columns
CO36CE02.2	Ability to analyze and design of simple bolted and welded connections
CO36CE02.3	Identify and compute the design loads on a typical steel building
CO36CE02.4	Familiarity with professional and ethical issues and the importance of lifelong learning in structural engineering
CO36CE02.5	Recognize the design philosophy of steel structures and have concept on limit state design
CO36CE02.6	Apply the principles, procedures and current code requirements to the analysis and design of steel tension members, beams, columns, beam-columns and connections

<b>Course Name: Water Resource Engineering-I</b>	<b>Course Code: CO36CE03</b>
CO36CE03.1	To understand the importance of Hydrological cycle, estimation of precipitation, and artificial rain
CO36CE03.2	To Understand the basic concept of evaporation, transpiration and evapo-transpiration, rainfall and run-off and its measurement and estimation
CO36CE03.3	To study the importance, estimation and control techniques of flood
CO36CE03.4	To understand the practical application of different methods and types of Irrigation system and Minor Irrigation work its uses.
CO36CE03.5	Have the necessary information regarding the crop water requirement, what are principle crop seasons in India and Irrigation efficiency also to understand the sprinkler and Drip Irrigation.
CO36CE03.6	To understand the knowledge of aquifer, water Harvesting its techniques and methods from that students can apply the knowledge of above in future

<b>Course Name: Transportation Engineering-II</b>	<b>Course Code: CO36CE04</b>
CO36CE04.1	The students will able to develop the knowledge about Rail transportation system, terms related to railway system such as types of trails, capacities of trains, etc.

<b>CO36CE04.2</b>	In this part student will gain knowledge about the permanent way, rail gauges, various elements of rails, Rails geometric design and other terms related to rails such as super elevation and other rails elements.
<b>CO36CE04.3</b>	In these section students will learn about the various design elements of railway systems such as junctions, rail joints, stations, rails traffic elements such as signals etc.
<b>CO36CE04.4</b>	This part deals the Airport Transportation system, its development and the agencies controlling the same.
<b>CO36CE04.5</b>	In these parts students will learn about the layout of the airport and will gain about the detail knowledge about the various elements of airport.
<b>CO36CE04.6</b>	This part provides the knowledge about the tunnel system its alignment, methods of tunnelling, shapes and its construction and maintenance.

<b>Course Name: Free Elective-II</b>	<b>Course Code: CO36CE05</b>
<b>CO36CE05.1</b>	Familiarize themselves with various Non Conventional Sources of energy and way of harnessing them
<b>CO36CE05.2</b>	Conceptualize the use of solar radiations as a source of energy
<b>CO36CE05.3</b>	Study the instruments used for measuring radiations
<b>CO36CE05.4</b>	Learn about the methodologies used for collecting the solar energy
<b>CO36CE05.5</b>	Learn about techniques and methods for solar energy utilization and storage
<b>CO36CE05.6</b>	Conceptualize the availability and harnessing ways for energy available in Oceans
<b>CO36CE05.7</b>	Provide solutions related to various environmental issues associated with the use of conventional fuels
<b>CO36CE05.8</b>	Learn about the energy resources such as Biomass, Solar energy plantation
<b>CO36CE05.9</b>	Study direct energy conversion technologies
<b>CO36CE05.10</b>	Focus upon the use of vegetable oil as liquid fuels



<b>Course Name: Estimating And Costing</b>	<b>Course Code: CO36CE06</b>
<b>CO36CE06.1</b>	Solve a numerical on approximate estimate by using various methods plinth area method, cubic rate method, bay method, approximate quantities with bill method etc.
<b>CO36CE06.2</b>	Analyze the current schedule rates for different items of works. Calculating the quantities of materials and labours for different items of work.
<b>CO36CE06.3</b>	Calculate the estimate for construction by using long wall – short wall method and Centre line method and bar bending schedule.
<b>CO36CE06.4</b>	Calculate the quantities of banking & cutting in plain road and in hilly regions also. To draw the longitudinal section of road profile.
<b>CO36CE06.5</b>	Understand the terminologies cost, price, value. Calculate the different types of values in the market. To calculate the valuation of the building.
<b>CO36CE06.6</b>	Understand the tender document, contracts, different types of contracts and different laws & regulations in construction field, legal aspects in construction field.

Year: Fourth Year	Semester: Seventh
<b>Course Name: Theory of Structures – II</b>	<b>Course Code: CO47CE01</b>
<b>CO47CE01.1</b>	Student will be able to analyse portal frames with side sway by using Moment Distribution method & Slope deflection method.
<b>CO47CE01.2</b>	Student will be able to analyse Continuous beams and single bay single storey portal frames with side sway by using Kani's method.
<b>CO47CE01.3</b>	Student will be able to understand Castigliano's second theorem, principle of least work and Analysis of redundant frames.
<b>CO47CE01.4</b>	Student will be able to understand Maxwell's reciprocal theorem, Betty's theorem, Muller -Breslau's principle. Also implementation of Influence line diagrams for continuous beams.
<b>CO47CE01.5</b>	Student will be able to understand Flexibility method, flexibility coefficients static redundancy and compatibility condition application to beams. Also having knowledge of terms like plastic analysis of steel structure, shape factor, plastic section modulus, redistribution of moment, upper and lower bound theorems, collapse loads for beams.
<b>CO47CE01.6</b>	Student will be able to understand Stiffness method, kinematic redundancy, stiffness coefficients, direct stiffness approach, application to continuous beams and single - bay, single - storey portal.

<b>Course Name: Geotechnical Engineering-II</b>	<b>Course Code: CO47CE02</b>
<b>CO47CE02.1</b>	To get knowledge of site specific field investigations including collection of soil samples for testing and observation of soil behaviour.
<b>CO47CE02.2</b>	To understand the basic concept of ultimate bearing capacity of shallow foundations including modification of bearing capacity equations for water table, factor of safety.
<b>CO47CE02.3</b>	To understand the concept of Lateral Earth Pressure and including Rankine's theory of active and passive earth pressures with and without sloping backfill.
<b>CO47CE02.4</b>	To explain in what circumstances pile is needed and how do analysis the pile and pile group under various soil conditions.
<b>CO47CE02.5</b>	Estimate the amount of consolidation and settlement and time required for settlement under a given load.
<b>CO47CE02.6</b>	1. To explain overall stability analysis of well foundation & To analyse earth retaining structures for any kind of soil medium

<b>Course Name: Structural Design-II</b>	<b>Course Code: CO47CE03</b>
<b>CO47CE03.1</b>	Understand and design flat slab.
<b>CO47CE03.2</b>	Understand and design cantilever and counter fort retaining wall.
<b>CO47CE03.3</b>	Understand and design combined footing.
<b>CO47CE03.4</b>	Understand and design simple, small structures like Canopies& Parking shed.
<b>CO47CE03.5</b>	Understand pre-stressed concrete structures, pre-stressing methods and materials used.
<b>CO47CE03.6</b>	Understand and calculate the losses in pre-stress.
<b>CO47CE03.7</b>	Analyse the beam for flexure under working load for rectangular and flanged section.
<b>CO47CE03.8</b>	Design pre-stressed beam, one way single span slab, and circular water tank.

<b>Course Name: Environmental Engineering -I</b>	<b>Course Code: CO47CE04</b>
<b>CO47CE04.1</b>	Student will learn the concept related to water supply, various sources, design period, per capita demand and various methods to forecast population.
<b>CO47CE04.2</b>	Student will understand water quality and analysis i.e. physical, chemical and bacteriological, Impurities in water, their effects and significance. Water quality standards I.S. & WHO. Layouts of different water treatment works
<b>CO47CE04.3</b>	Student will learn various processes involved in water treatment process such as Aeration, Sedimentation, Flocculation and Clarifloculator along with their various types, Design criteria and working
<b>CO47CE04.4</b>	Student will understand the concept of filtration, various types and its modification. Rapid sand and slow sand filters, filter media, Rate of filtration, under drainage system and washing process, design and working of filters.
<b>CO47CE04.5</b>	To learn good of disinfectant and various methods of disinfection. Chlorination Methods and super chlorination. Introduction to tertiary treatments.
<b>CO47CE04.6</b>	To learn distribution system, types of system and various types of storage reservoirs. Type of storage reservoirs, capacity, Types of conduits, selection, joints, hydraulic design.

<b>Course Name:Advanced Earthquake Engg- I</b>	<b>Course Code: CO47CE05</b>
<b>CO47CE05.1</b>	Past Earthquake behaviour, ground motion characteristics for Major Project Site.
<b>CO47CE05.2</b>	To understand Detailed study of IS: 1893-2002. And seismic Analysis of building.
<b>CO47CE05.3</b>	To study the Seismic Design for bridges, Dams, Chimneys.
<b>CO47CE05.4</b>	Vulnerability Atlas and Techno legal issues.
<b>CO47CE05.5</b>	To understand Reapiring and retrofitting as per IS 13935.
<b>CO47CE05.6</b>	To Study Methodologies for repairs for wall, roofs, slabs columnsand foundation.

Year: Fourth Year	Semester: Eighth
<b>Course Name: Water Resource Engineering-II</b>	<b>Course Code: CO48CE01</b>
CO48CE01.1	Understand different investigation for reservoir planning and designing.
CO48CE01.2	Understand types, construction, and forces acting on Earthen, Gravity dam and their causes of failure.
CO48CE01.3	Design and Drawing of Elementary and practical profile of gravity dam.
CO48CE01.4	Understand different components of diversion head work & understand the seepage theories for design of weir on permeable foundation.
CO48CE01.5	Identify the different types of Spillways & Energy dissipation methods and design an Ogee spillway for given discharge.
CO48CE01.6	Understand canal system, set suitable canal-alignment and calculate balancing depth of canal.
CO48CE01.7	Understand the construction and necessity of canal masonry work.
CO48CE01.8	Understand the terms well irrigation, water management, water-shed management and river training works.

<b>Course Name: Environmental Engineering-II</b>	<b>Course Code: CO48CE02</b>
CO48CE02.1	Student will learn various concepts related to waste water, flow systems and layouts adopted, capacity and design of sewers and how Testing & maintenance of sewers is carried out
CO48CE02.2	To understand various properties of waste water, according to properties of waste water how it is treated, design, working and constructional details of various units in sewage treatment plant.
CO48CE02.3	To learn Biological treatment used for purification of waste water, Trickling filters design and construction details. Activated sludge process and its Different modified forms.
CO48CE02.4	Student will learn how can was waste water can be treated economically as well as environmental friendly. Working and design of various low cost waste treatment units.
CO48CE02.5	Student will learn different characteristics of solid waste and according to characteristics disposing of solid waste. Types of collection system and frequency of collection of solid waste.
CO48CE02.6	Students will learn new concept related to Air Pollution, various pollutants their sources and their effects on man and material, prevention or air pollution at sources various control devices and also Environmental Audit.

<b>Course Name: Project Planning &amp; Management</b>	<b>Course Code: CO48CE03</b>
CO48CE03.1	Solve a set of problem on Gantt chart, Bar Chart representing the particular project while execution.
CO48CE03.2	Understand the basic concept of Critical Path Method and also have knowledge of float computation
CO48CE03.3	Find the information related to time estimates, probability factor, crash programme, normal cost & crash cost.
CO48CE03.4	Study the various principles of management, safety management and material management, objectives function too.
CO48CE03.5	Have the necessary information regarding the equipment management, know about their working, output factors affecting and problem on output.
CO48CE03.6	Have the necessary proficiency of using Microsoft Project Planner Software for obtaining the above solution

<b>Course Name: Advanced Waste Water &amp; Industrial Waste Water Treatment</b>	<b>Course Code: CO48CE04</b>
<b>CO48CE04.1</b>	To understand the Physical unit process screening, mixing, flocculation, sedimentation, floatation, design of Grit Chambers and Screens, chemical Unit Processes: precipitation, gas transfer, and adsorption.
<b>CO48CE04.2</b>	To study the Biological Unit Process fundamentals of biological treatment. Design of trickling filter & activated sludge process.
<b>CO48CE04.3</b>	To understand the Low cost waste water treatment design of oxidation pond and aerated, Oxidation ditch. Design of Secondary Settling Tank, Methods of disposal of industrial wastes. Equalization tank, Neutralization.
<b>CO48CE04.4</b>	To understand the General Effect of discharge of industrial waste waters on streams, land and environment Problems involved in treatment. Variation in quality and quantity of industrial wastewaters. Standards & Criteria Indian standards for discharge of treated waste water.
<b>CO48CE04.5</b>	To study the General Approaches to Planning of Industrial Wastewater Treatment and disposal. Equalization and proportioning Neutralization. Treating different effluent streams separately.
<b>CO48CE04.6</b>	To study Process flow diagram, characteristics and treatment of various industrial wastes. Industrial wastes of pulp and paper, textiles, tannery, food, canning, sugar mills, distillery, dairy, Pharmaceutical, Electroplating etc.